Service Manual

FOR THE TURBOCHEF NGO/SŎTA™ RAPID COOK OVEN

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For further information, call
800.90TURBO
or
+1 214.379.6000

The information contained in this manual is important for the proper installation, use, maintenance, and repair of this oven. Follow these procedures and instructions to help ensure satisfactory baking results and years of trouble-free service.

Errors – descriptive, typographic, or pictorial – are subject to correction. Specifications are subject to change without notice.

Please carefully read this manual and retain it for future reference.

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IMPORTANT SAFETY INSTRUCTIONS

WARNING: When operating this oven, strictly adhere to the following safety precautions to reduce the risk of burns, electric shock, fire, injury, damage to oven or property near oven, or possible exposure to excessive microwave energy.

General Safety Information

- ✓ Read all instructions before using this appliance.
- ✓ Read and follow the specific "Precautions to be Observed Before and During Servicing to Avoid Possible Exposure to Excessive Microwave Energy" found on page ii.
- ✓ This appliance must be grounded. Connect only to a properly grounded outlet. See "Grounding Instructions" on page ii.
- ✓ Install or locate this appliance only in accordance with the provided installation instructions.
- ✓ This appliance should be serviced by qualified service personnel only. Contact the nearest authorized service facility for examination, repair, or adjustment.
- ✓ Keep the cord away from heated surfaces.
- ✓ Liquids, such as water, coffee, or tea are able to be overheated beyond the boiling point without appearing to be boiling. Visible bubbling or boiling when the container is removed from the microwave oven is not always present. THIS COULD RESULT IN VERY HOT LIQUID SUDDENLY BOILING OVER WHEN THE CONTAINER IS DISTURBED OR A UTENSIL IS INSERTED INTO THE LIQUID.
- ✓ WARNING: The contents of feeding bottles and baby food jars must be stirred or shaken and the temperature checked before consumption, in order to avoid burns (IEC 60335-2-90)
- ✓ Use this appliance only for its intended uses as described in this manual.
- ✓ Only use utensils that are suitable for use in microwave ovens (IEC 60335-2-90)
- x DO NOT use corrosive chemicals or vapors in this appliance; it is not designed for industrial/laboratory use.
- x WARNING: DO NOT heat liquids or other foods in sealed containers (e.g., jars, whole eggs, etc.) since they are liable to explode.
- x DO NOT cook with metal lids or aluminum foil
- x DO NOT cook without food in the cook cavity.
- x DO NOT allow children to use this appliance.
- x DO NOT operate this appliance if it has a damaged cord or plug, is not working properly, or has been damaged or dropped. See "Power Cord Replacement" found on page ii.
- x DO NOT cover or block any openings on this appliance.
- x DO NOT store this appliance outdoors.
- x DO NOT use this product near water (e.g., near a kitchen sink, in a wet basement, near a swimming pool).
- x DO NOT immerse the cord or plug in water.
- x DO NOT let the cord hang over the edge of a table or counter.
- x DO NOT use a water jet for cleaning. See pages 5-6 in this manual for proper cleaning procedures.
- x This appliance is not to be used by children or persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.

Reducing Fire Risk

- ✓ Remove wire twist-ties from paper or plastic bags used to facilitate cooking in the oven.
- ✓ If materials inside the oven ignite, keep the oven door closed, turn the oven off, and disconnect the power cord or shut off power at the fuse or circuit breaker panel.
- ✓ If smoke is observed, switch off or unplug the oven. Keep the door closed to stifle any flames.
- x DO NOT use the cook cavity for storage purposes.
- x DO NOT overcook food. Carefully attend to the oven if paper, plastic, or other combustible materials are placed inside the oven to facilitate cooking.
- x DO NOT leave paper products, cooking utensils, or food in the cavity when the oven is not in use.

Grounding Instructions

This appliance must be grounded. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current. This oven is equipped with a cord that has a grounding wire with a grounding plug, which must be plugged into an outlet that is properly installed and grounded. Consult a qualified electrician or serviceman if uncertain about the ability to follow grounding instructions or if doubt exists as to whether the appliance is properly grounded.

- x DO NOT use an extension cord. If the power cord is too short, have a qualified electrician or serviceman install an outlet near the appliance.

⚠ WARNING: Improper grounding can result in risk of electric shock.

Power Cord Replacement

If the power cord is damaged, it must be replaced by the manufacturer, its service agent, or a similarly qualified person.

Precautions to be Observed Before and During Servicing to Avoid Possible Exposure to Excessive Microwave Energy

(a) DO NOT operate or allow the oven to be operated with the door open.

(b) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary: (1) interlock operation, (2) proper door closing, (3) seal and sealing surfaces (arcing, wear, and other damage), (4) damage to or loosening of hinges and latches, (5) evidence of dropping or abuse.

(c) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.

(d) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.

(e) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

Refer to page 22 for leakage test procedures.

RF Interference Considerations

The NGO oven generates radio frequency signals. This device has been tested and was determined to be in compliance with applicable portions of FCC part 18 requirements and to the protection requirements of Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electro-magnetic compatibility at the time of manufacture. However, some equipment with sensitivity to signals below these limits may experience interference.

If your equipment experiences interference:

- ✓ Increase the physical separation between this oven and the sensitive equipment.
- ✓ If the sensitive device can be grounded, do so following accepted grounding practices.
- ✓ If battery-powered microphones are being affected, ensure that the batteries are fully charged.
- ✓ Keep sensitive equipment on separate electrical circuits if possible.
- ✓ Route intercom wires, microphone wires, speaker cables, etc. away from the oven.

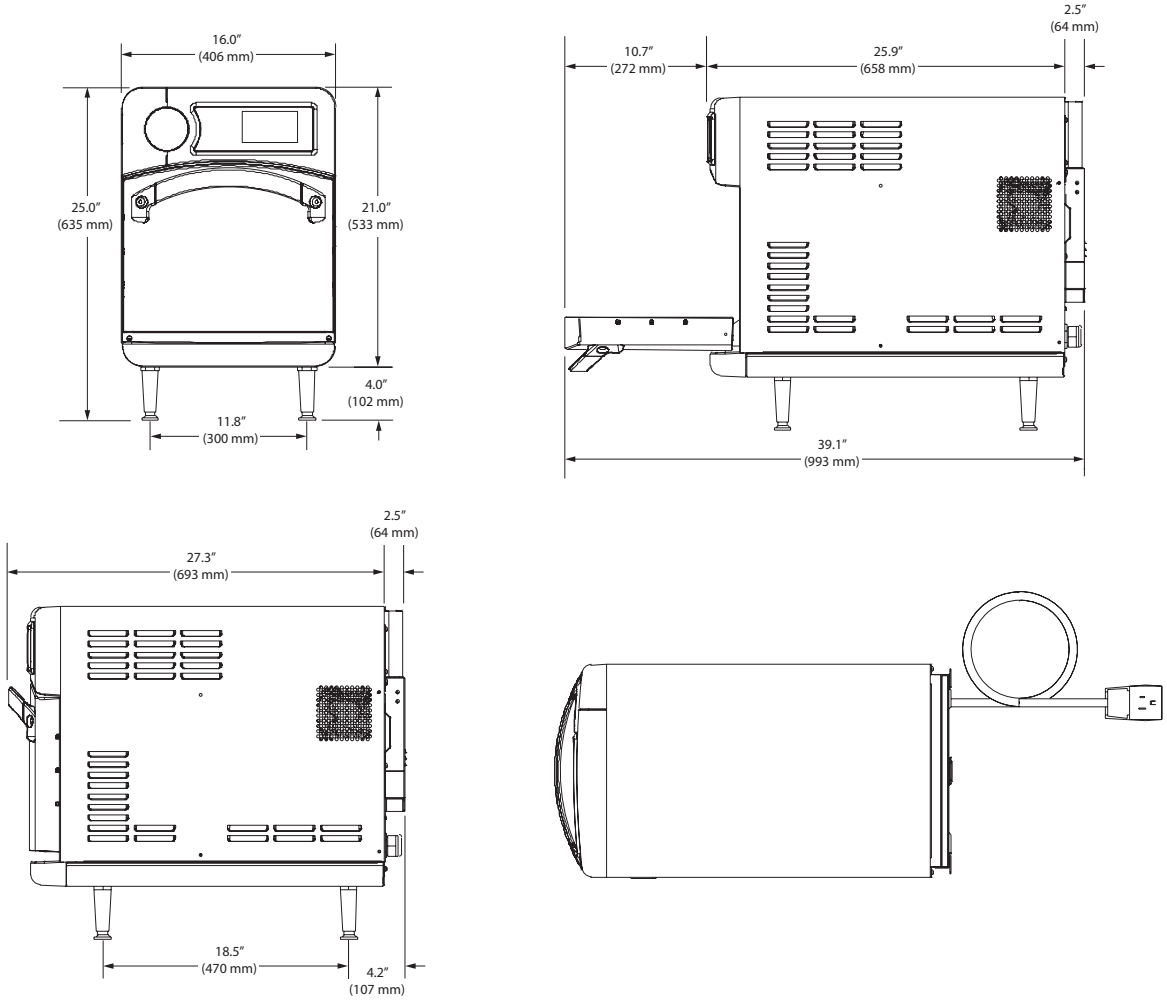


Figure 1: NGO Oven Dimensions

Theory of Operation

Utilizing TurboChef's patented technology to rapidly cook food without compromising quality, the NGO oven provides superior cooking performance while requiring minimal space and energy consumption. The control system precisely coordinates independent top and bottom impinged airflow with top-launched microwave to deliver product-specific results, and integral catalytic converters allow for UL®-certified ventless operation (see page 4 for details).

This manual includes instructions for installing, cleaning, operating, and servicing the NGO oven. If you have questions that are not addressed in this manual, contact Customer Support at 800.90TURBO (+1 214.379.6000) or your Authorized Distributor.

Dimensions

Oven Dimensions

Height: 25.0" (635 mm)
Width: 16.0" (406 mm)
Depth (footprint): 18.5" (470 mm)
Depth (door closed): 29.8" (757 mm)
Depth (door open): 39.1" (993 mm)
Weight, Sota: 170 lb. (77 kg)
Weight, Single Magnetron Sota: 135 lb. (61.2 kg)

Cook Cavity Dimensions

Height: 7.2" (183 mm)
Width: 12.5" (318 mm)
Depth: 10.5" (267 mm)
Volume: 0.54 ft^3 (15.4 liters)

Clearances

Top: 5" (127 mm)
Sides: 2" (51 mm)

Certifications

cULus, UL EPH, TÜV, CE, FDA

Oven Construction

Exterior

- Two-tone stainless steel front, top, and sides
- Ergonomic door handle
- 4" (102 mm) adjustable legs
- Cool-to-the-touch door with microwave seal

Interior

- 304 stainless steel interior
- Fully-insulated cook chamber
- Removable rack
- Top and bottom jetplates

Electrical Specifications

TurboChef recommends a Type D circuit breaker for all installations outside the United States.

Single Phase (6200 watts)

US/Canada: 208/240 VAC*, 60 Hz, 30 A
Europe/Asia (UK): 230 VAC, 50 Hz, 27 A
Brazil (BK): 220 VAC, 60 Hz, 28 A
Latin America (LA): 220 VAC, 60 Hz, 28 A
Japan (JK): 200 VAC, 50 or 60 Hz, 30 A

Multiphase (6200 watts)

Europe/Asia Wye (EW): 400 VAC, 50 Hz, 16 A
Europe/Asia Delta (ED): 230 VAC, 50 Hz, 20 A
Japan Delta (JD): 200 VAC, 50 or 60 Hz, 20 A
Korea/Middle East Wye (KW): 400 VAC, 60 Hz, 16 A
Korea/Middle East Delta (SD): 230 VAC, 60 Hz, 20 A
Australia (AU): 400 VAC, 50 Hz, 16 A

Single Magnetron

US/Canada 1 Ph: 208/240 VAC*, 60 Hz, 20 A, 4.2/4.8 kW
Europe (UK) 1 Ph: 230 VAC, 50 Hz, 13 A, 3 kW
Europe (UK) 1 Ph: 230 VAC, 50 Hz, 16 A, 3.6 kW

* US/Canada models include a voltage sensor that detects 208 or 240 VAC, but does not compensate for lack-of or over-voltage installations.

Installation

Install or locate this appliance only in accordance with the instructions below.

Unpacking Instructions

1. Remove the oven from its packaging.
2. Before discarding, check the packaging thoroughly for accessories and literature.

NOTE: Packaging may also be retained in case the oven may at some point be shipped somewhere else or returned to the manufacturer.

3. Check the cook cavity thoroughly for accessories and literature.
4. Discard any packaging in the cook cavity.

Installation Warnings - Read Before Lifting Oven

⚠ WARNING: The Sota oven weighs approximately 170 lb. (77 kg). The Single Magnetron Sota oven weighs approximately 135 lb. (61.2 kg). Never lift with fewer than two people.

⚠ WARNING: Never lift the oven from the front and rear or by the door handle. Doing so will cause the door to misalign, resulting in a non-warranty service call.

⚠ WARNING: The oven must be properly placed on a food station at all times. TurboChef will not recognize a fallen oven as a warrantable claim and is not liable for any injuries that may result.

⚠ WARNING: This oven is not intended for built-in installation (i.e., installing the oven in any structure that surrounds the oven by five or more sides). Be sure to provide a minimum of 2" (51 mm) clearance for all sides and 5" (127 mm) clearance for the top.

⚠ WARNING: This oven is not intended to be stacked without appropriate hardware. Contact TurboChef for details.

Lifting and Placing the Oven

1. Prepare a surface at least 26" (660 mm) deep and capable of supporting 175 lb. (79 kg).

NOTE: Do not remove the oven legs, as clearance is required for the bottom cooling fan.

2. Position one or more persons at the left and right sides of the oven.
3. Place hands under the oven and lift.
4. Place the oven on the prepared surface, ensuring no edges are hanging off the sides.
5. Ensure the oven rack is properly installed (attached to the bottom jetplate).
6. Plug in the oven.

NOTE: The oven is primarily serviced through its top. DO NOT install shelving directly over the unit. The operator will be responsible for service charges incurred as a result of added time required to access the top of the oven.

Installation Near Open Heat Source

When placing a TurboChef oven near an open heat source (Figure 2), strictly adhere to the following:

- If the oven is being placed near a grill or stove, a divider must exist between the oven and the open heat source, with a minimum of 6" (152 mm) between the oven and the divider.
- If the oven is being placed near a fryer, a divider must exist between the oven and fryer, with a minimum of 12" (305 mm) between the oven and the divider.
- The height of the divider must be greater than or equal to the height of the oven (25.0" or 635 mm).
- Verify the oven location has a minimum 5" (127 mm) clearance on top and a minimum 2" (51 mm) clearance on each side.

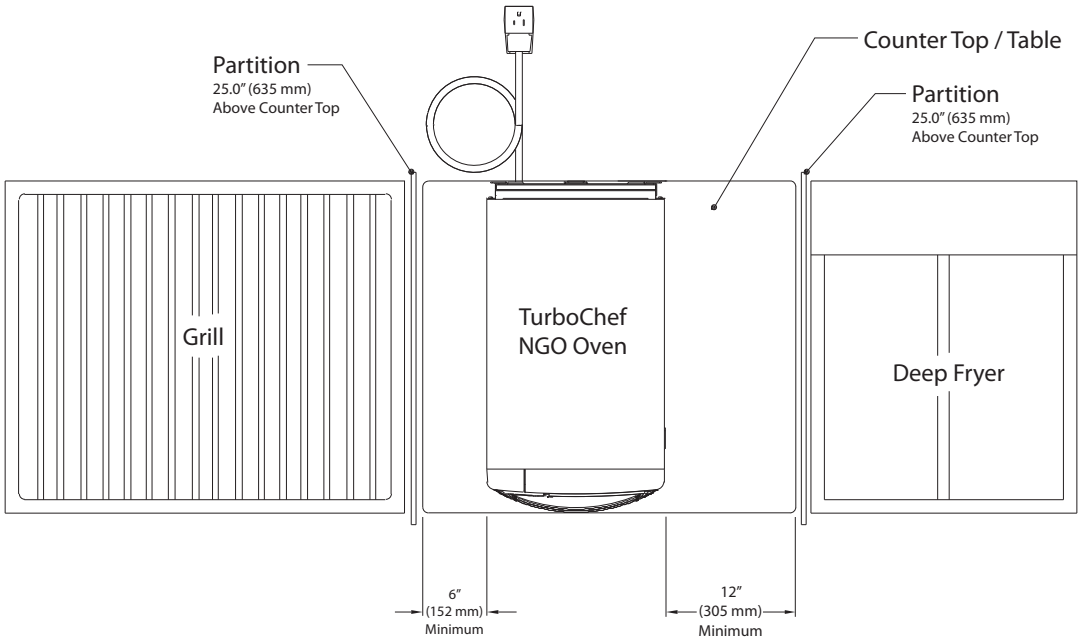


Figure 2: Installation Near Open Heat Source

Oven Connect Suite

Oven Connect

Oven Connect™ allows you to update menu settings for multiple ovens at once, from one central location. Oven Connect can also download oven diagnostics and counters. For more information on how to network ovens, see page 12. For information on obtaining Oven Connect, contact TurboChef Customer Support at 800.90TURBO or +1 214.379.6000.

If servicing a control board, follow the instructions on page 27 to ensure proper connectivity.

ChefComm Pro

Part Number: CON-7006

ChefComm Pro® empowers any user of a TurboChef oven to easily create menu settings on a computer and transfer them to an oven via smart card. For more information, call TurboChef Customer Support at 800.90TURBO or +1 214.379.6000.

ChefComm Limited

Part Number: CON-7016

ChefComm Limited™ is a "read-and-transfer only" version of ChefComm Pro that helps ensure carefully-crafted settings are easy to distribute globally, while providing the peace of mind that they will not be altered.

Voltage Selection

For North America oven models, the oven will detect 208 or 240 incoming voltage.

The initial voltage selection is typically completed before the oven is used by the customer. However, if incoming voltage for the store is different than the preset voltage, the operator will be required to select either 208 or 240 after pressing the On/Off key to turn on the oven. The correct voltage will be enlarged on the screen, identifying which option to select (see Figure 3 below).

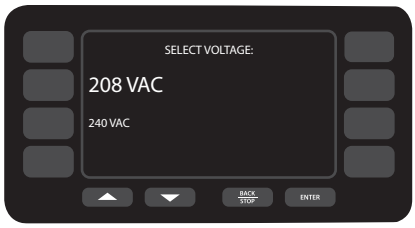


Figure 3: Selecting Voltage

Ventilation

The TurboChef TurboChef Sŏta (model NGO) oven has been approved by Underwriter's Laboratory for ventless operation (UL KNLZ listing) for all food items except for foods classified as "fatty raw proteins." Such foods include bone-in, skin-on chicken, raw ham¬burger meat, raw bacon, raw sausage, steaks, etc. If cooking these types of foods, consult local HVAC codes and authorities to ensure compliance with ventilation requirements.

To ensure continued compliance with all health, building, and fire codes, you are required to maintain clean and sanitary conditions around your oven at all times.

NOTE: In no event shall the manufacturer assume any liability for damages or injuries resulting from installations which are not in compliance with the instructions and codes previously listed. Failure to comply with these instructions could result in the issuance of a temporary cease and desist order from the local health department until the environment concerns are addressed.

Daily Maintenance

Follow the steps below when cleaning your NGO oven. Use only TurboChef®-approved cleaning chemicals. The use of any other cleaning products may damage critical oven components, resulting in a non-warranty service call.

Supplies and Equipment

TurboChef® Oven Cleaner (Product Number: 103180), TurboChef® Oven Guard (Product Number: 103181, optional for easier maintenance), Kay Click-San® sanitizer, nylon scrub pad, cleaning towel, disposable gloves, protective eyewear, dust mask (optional)

Step 1

Step 2 (Fig A)

Step 2 (Fig B)

Step 4

Step 5

Step 1: Prepare the Oven

⚠ WARNING: The oven operates at approximately 525°F (274°C) and may cause injury if not allowed to cool properly.

- Turn off the oven by pressing the On/Off key.
- Slightly open the oven door.
- Cooling takes approximately 30 minutes. DO NOT clean the oven until the oven displays OVEN OFF: READY TO CLEAN.

Step 2: Remove the Wire Rack and Lower Jetplate

⚠ WARNING: Be sure the oven interior is cool before removing these items.

⚠ CAUTION: Do not force the rack out by pulling upward. Forcefully dislodging the rack could cause the top ceramic jetplate to break.

- The wire rack and lower jetplate are connected and can be removed together.
- Push the wire rack towards the rear cavity wall (Fig A) and then lift up (Fig B).
- Maneuver the bottom jetplate out from under the tabs on the rear cavity wall.

⚠ CAUTION: DO NOT remove the top ceramic jetplate; breakage will result in a non-warranty service call.

Step 3: Clean the Wire Rack and Lower Jetplate

- Detach the wire rack from the jetplate and wash, rinse, sanitize, and dry each part.

Step 4: Clean the Air Filter

⚠ CAUTION: TurboChef does not recognize blocked air vents as a warrantable claim. The filter must be cleaned regularly or replaced if damaged. During oven operation, the filter must remain in place at all times.

- Remove the air filter from the back of the oven.
- Rinse the air filter with hot water.
- Allow the air filter to dry completely.

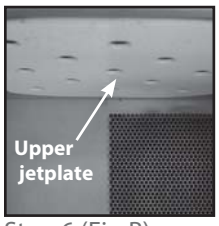
⚠ CAUTION: DO NOT operate the oven without the air filter in place.

Step 5: Wipe the Oven Interior

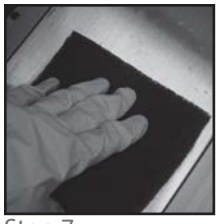
- Use a food vacuum or damp towel to remove large particles from the oven cavity.

Continued on page 6.

Step 6 (Fig A)



Step 6 (Fig B)


Step 7

Step 8

Step 9

Step 10

Step 11

Step 6: Clean the Oven Interior

- Spray TurboChef ® Oven Cleaner onto the top, bottom, and sides of oven interior.

⚠ CAUTION: DO NOT spray Oven Cleaner into the holes on the back oven wall. Doing so can damage critical oven components, resulting in a non-warranty service call.

- Allow Oven Cleaner to penetrate stains for five minutes.
- Clean the oven interior with a nylon scrub pad.

⚠ CAUTION: DO NOT attempt to scrub the upper jetplate (Fig B). If food is stuck to the oven ceiling, gently remove it without applying pressure to the ceramic plate. Breakage will result in a non-warranty service call.

⚠ CAUTION: DO NOT remove the top ceramic jetplate (A); breakage will result in a non-warranty service call.

Step 7: Clean and Dry the Oven Door

- Clean the oven door with Oven Cleaner and a nylon scrub pad.
- Wipe the oven door with a damp towel, and then a dry towel.

Step 8: Rinse or Wipe the Oven Interior

⚠ CAUTION: DO NOT use a hose or water jet for cleaning. Doing so can damage critical oven components, resulting in a non-warranty service call.

- Wipe down the oven interior with a clean damp towel.
- Dry the oven interior with a clean towel.

Step 9: Apply TurboChef® Oven Guard - Optional for Easier Maintenance

- Spray TurboChef® Oven Guard onto a clean towel.
- Wipe the interior walls and the inside of the oven door.

⚠ CAUTION: DO NOT spray Oven Guard into the cavity, especially around the holes on the back oven wall. Doing so can damage critical oven components, resulting in a non-warranty service call.

Step 10: Reinstall Components

- Reconnect the wire rack to the lower jetplate, and reinstall both items.
- Close the oven door.
- Reinstall the filter, or replace it with a new one if the mesh is deteriorated, has large openings, or has started to dislodge from the frame.

Step 11: Clean the Oven Exterior

- Wipe the oven exterior with a clean, damp towel.
- Remove the lower panel and remove large food particles.
- Wipe the panel with a clean, damp towel.

⚠ CAUTION: DO NOT spray chemicals into any openings, such as the louvers on the side panels or the rear vent catalyst housing. Doing so can damage critical oven components, resulting in a non-warranty service call.

- The oven is ready to turn on.

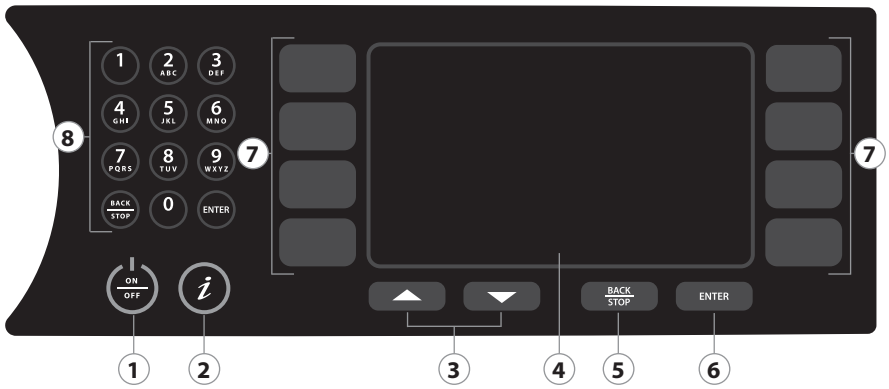


Figure 4: Oven Controls

Oven Controls

1. On/Off Key
Press to turn the oven on (begin warmup) or off (cool down), or to exit Info Mode (page 11).

2. Info Key
When the oven is off or cooling down, press to access the Info Mode (page 11).

3. Up and Down Keys
When the oven is ready to cook (i.e., warmed up and waiting for a cook command), press the Up or Down key to view additional food groups or items.

When the oven is in the Info Mode (page 11), press to navigate between screens 1 and 2.

When editing a food item, press to navigate between editable fields (Figure 26, page 18).

4. Display
The display shows information relevant to the current oven operation and/or user options.

5. Back/Stop Key
When the oven is cooking, press the Back/Stop key to immediately terminate a cook cycle.

When the oven is ready to cook (i.e., warmed up and waiting for a cook command), or in the Info Mode (page 11), press the Back/Stop key to return to the previous screen.

6. Enter Key
Press the Enter key when saving changes to food item settings (Figure 26, page 18), or whenever instructed by the oven screen.

7. Soft Keys
There are eight soft keys - four to the left and right of the display. Press a soft key to select an option adjacent to that key on the display.

NOTE: Soft keys are labeled L1-L4 and R1-R4 in this manual (where applicable) for easier identification and reference.

8. Numeric Keypad
Use the numeric keypad to enter access passwords or modify cook settings (Figure 26, page 18). The numeric keypad also contains a Back/Stop key and an Enter key, which are functionally identical to Items 5 and 6.

Cooking

The oven is preprogrammed with recipe settings at the time of manufacture and is ready to operate out of the box. If these settings are erased, new menu settings must be either loaded via Oven Connect (page 4), smart card (page 16), or programmed manually (pages 17-18). The oven will not cook unless settings are present.

Note that the steps below are not always sequential. Typically, multiple items are cooked before cooling the oven (Step 10).

Step 1: Turn the Oven On

Figure 5: Oven Off

When the oven is off (Figure 5), the oven temperature has receded below 150°F (66°C), but the display and keypad remain on.

Press the On/Off key to turn the oven on.

Step 2: Select Cook Temperature

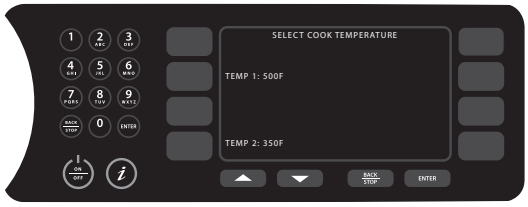


Figure 6: Select Cook Temperature

The oven stores two different cook temperature settings (see page 17 for more information). Only items associated with the selected temperature setting can be cooked without re-specifying the temperature setting.

To select a temperature, press the adjacent soft key.

NOTE: If both temperature settings are the same, this screen will be bypassed and access to all food items will be allowed.

Step 3: Warming Up

Figure 7: Warming Up

During this step, the oven warms to the selected or pre-set temperature.

Step 4: Soaking

Once the oven temperature reaches the set point, the oven will continue to warm for eight minutes to ensure the cook cavity surfaces absorb enough heat so as to not affect cooking results. This process is called “soaking.”

NOTE: While the oven is soaking, the operator will be able to navigate through the menu, but will not be allowed to cook until the timer reaches 0:00.

Step 5: Ready to Cook

⚠ WARNING: Inside of oven and oven door are hot!

1. Place the food into the oven.
2. Select a food group by pressing its adjacent soft key, or press the Up or Down key for additional food groups.
3. Select an item to cook by pressing its adjacent soft key, or press the Up or Down key for additional items.
4. If applicable, select a quantity to cook by pressing its adjacent soft key.

NOTE: Quantities (if applicable) can be renamed (see page 18).

NOTE: See Figure 24, page 17 to determine which menu structure your oven is equipped with.

Step 6: Adjusting the Time

The Adjust Time option is turned off by default. If you want the ability to modify the cook time before each cook cycle, this feature can be turned on from the Set Options screen (see page 12).

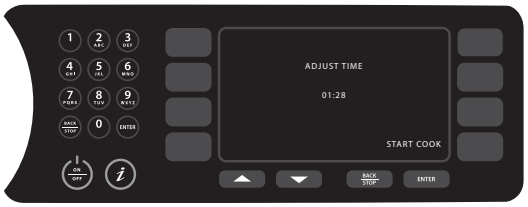


Figure 8: Adjust Time

1. If the Adjust Time screen appears, change the cook time (if required) using the number keys.
2. Press the bottom-right soft key to confirm and start cooking.

Step 7: Cooking

Figure 9: Cooking

NOTE: To immediately terminate a cook cycle, press the Back/Stop key.

NOTE: If the oven door is opened during a cook cycle, the cycle will pause until the door is closed and ENTER is pressed to resume.

Step 8: Check/Remove Food from Oven

Figure 10: Cooking Done

⚠ WARNING: Dish and inside of oven/oven door are hot!

Open the oven door and check/remove food.

Step 9: Additional Cooking Options

Figure 11: Additional Cooking Options

The Additional Cooking Options screen (Figure 11) is turned off by default. If you want the ability to cook a product beyond the original cook time, you can enable this feature from the Set Options screen (see page 12).

If the Additional Cooking Options screen appears and the food product requires more cooking:

- Select “cook more” if the inside of the food item is undercooked
- Select “brown more” if the outside of the food item requires more browning or crisping.
- Select “cook and brown more” if both the inside and outside of the food item are not done.
- Select “save adjusted time” to save any change to the cook time made during Step 6. Note that this option is not available if “Adjust Time” is disabled (page 12).
- Select “exit” to return to the food group selection screen.

Step 10: Cooling Down

When finished cooking for the day, press the On/Off key to turn the oven off and begin cooling down. During this step, the oven blows cool air into the cook cavity to return it to approximately 150°F (66°C), at which point the oven is safe to clean.

Overview of the Info Mode

To access the Info Mode, press the Info key when the oven is either off or cooling down. To toggle between screens 1 and 2, press the Up or Down key.

The Info Mode serves four main purposes:

1. To display oven information.
2. To provide access to Test Mode and additional diagnostic tools for service technicians.
3. To turn oven options and features on/off.
4. To update oven settings.

From screen 1 of the Info Mode (Figure 12):

- View the last temperature set point selected to cook (helps in diagnosing potential issues)
- View the oven serial number
- View the menu part number and revision
- View the software version
- Scroll through counters (cook counter, total cook time, magnetron time, and total oven on time)
- View the operating voltage (North America models only)
- Access the fault log
- Access service phone numbers

From screen 2 of the Info Mode (Figure 13):

- Access Test Mode
- Access the Set Options screen (page 12)
- Set the language (not available on all models)
- Set the date/time
- Access the Load Menu screen
- Increase/decrease the tone volume (sound)
- Set the F2 bypass (see page 12)
- View the temperature of the electrical compartment (EC Temp)

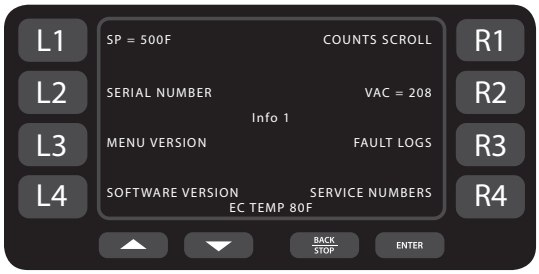


Figure 12: Info Mode Screen 1

Viewing Cook Counter/Time Logs

From Screen 1 of the Info Mode (Figure 12), press the R1 soft key (Counts Scroll):

- Once to display the cook counter.
- Twice to display total cook time.
- Three times to display total magnetron time.
- Four times to display total "oven on" time.

Viewing the Fault Log

From Screen 1 of the Info Mode (Figure 12), press the R3 soft key to view the fault log. To view time stamps of each fault occurrence, press the soft key adjacent to the fault code.

Viewing the Service Numbers

From Screen 1 of the Info Mode (Figure 12), press the R4 soft key to view technical support numbers.

Setting the Language

NOTE: Not available on some oven models.

From screen 2 of the Info Mode (Figure 13), press the L3 soft key to scroll through available languages. Each time L3 is pressed, a different language is selected in the following order: English (default), Spanish, French, German, Portuguese, Italian, Russian, Greek, Polish.

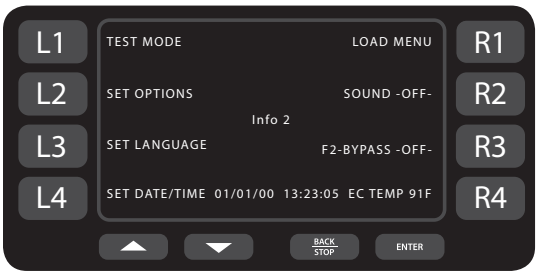


Figure 13: Info Mode Screen 2

F2 Bypass

The F2 alarm indicates the oven temperature is too low - see page 31 for details. From screen 2 of the Info Mode (Figure 13, page 11), press the R3 soft key to set the F2 Bypass.

ON means the oven will not terminate a cook cycle when an F2 alarm is encountered. The oven will still log the fault condition and flash the error message.

OFF means the oven will function as it normally would; i.e., when an F2 alarm is encountered during a cook cycle, the oven will terminate the remaining cook time.

Resetting the Oven

Resetting the oven is one way to clear an error message, should one occur. To reset the oven, hold the Info key for 5 seconds while the oven is cooling down or off.

Set Options Screens

From screen 2 of the Info Mode (Figure 13, page 11), press the L2 soft key to access the Set Options screens (Figures 14 and 15). When prompted, enter the password 9 4 2 8 and press the Enter key.

From the "1st Options Screen," the following oven options can be turned on or off:

- "Adjust Time" screen (see Step 6, page 9)
- "Cook More" screen (see Step 9, page 10)
- Edit Mode (page 17 for more details)
- "Load Menu" screen (page 16 for more details)
- Network Setup
- Auto On
- Auto Off
- Demo Mode (TurboChef use only)

Press the DOWN arrow key to access the "2nd Options Screen" (Figure 15, below).

From the "2nd Options Screen," the following oven options can be turned on or off:

- Light Ring (page 13 for more details)
- Catalytic Recondition (select models only, see page 13 for more details)

Network Setup

From the network setup screen, the following information may be entered to configure the oven for networking:

- IP Address
- Mask
- Gateway (GW)
- Domain Name Servers (DNS 1/DNS 2)

Each set of numbers may be edited in strings of three digits:

1. To edit the first string, press the Down key and then enter the first three digits.
2. Press the Down key again and enter the next three digits.
3. Repeat until all digits have been entered.
4. Press "Save."

If DHCP is turned on (top-left corner of screen), the oven will automatically be assigned an IP address when connected to a local area network (if an IP address is available).

Using Oven Connect requires each oven to be networked. For help determining the correct network setup information, contact your network administrator.

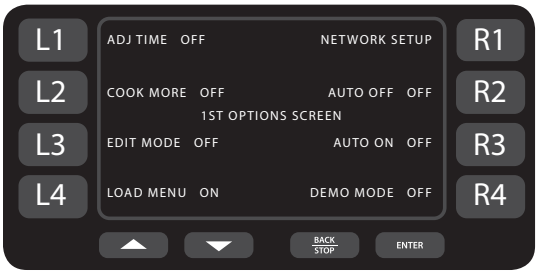


Figure 14: 1st Options Screen

Figure 15: 2nd Options Screen

Auto On and Off: Setting the Time

From screen 2 of the Info Mode (Figure 13, page 11), press the L4 soft key to access the Set Date/Time screen (Figure 16). The real time, "auto-on" time, and "auto-off" time can be set.

An accurate real time is critical for the usability of auto-on and auto-off. When these features are enabled from the 1st Options Screen (Figure 14, page 12), the oven will automatically turn on or off at the time specified.

An accurate date and time also helps ensure the accuracy of diagnostics and fault reporting. The oven time and date are set at the time of installation; however, an adjustment may be required at some point.

NOTE: The clock will not automatically update for Daylight Savings Time.

NOTE: The clock is 24-hour (8:30 p.m. = 20:30).

NOTE: The oven will not retain the date and time if it is left unplugged for two or more weeks.

IMPORTANT: For auto-on and auto-off to be active, they must be enabled from the 1st Options Screen (Figure 14, page 12).

To set the real-time date and time,

1. Use the L2 and R2 soft keys (middle left and middle right) to navigate between digits.
2. Use the number keys to enter the month, day, and year, followed by the hour and minute.
3. Select "Save" to save your changes or press the Back/Stop key to cancel.

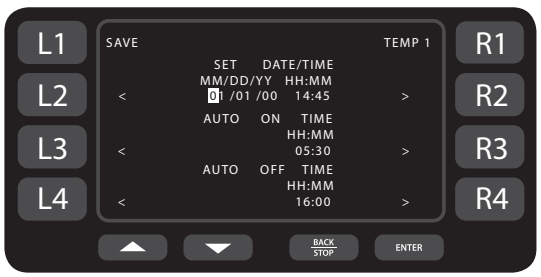


Figure 16: Set Date/Time

To set the auto-on or auto-off time,

1. Ensure the real-time clock is accurate.
2. Press the R1 soft key to toggle between temperatures 1 and 2. If two different temperatures are used for cooking, they must be set to different auto-on and auto-off times.
3. To navigate between digits, use the L3 and R3 soft keys for auto-on time and the L4 and R4 soft keys for auto-off time.
4. Use the number keys to enter the desired hour and minute for the oven to automatically turn on or off.
5. Select "Save" to save your changes or press the Back/Stop key to cancel.

Light Ring

From the 2nd Options Screen (Figure 15, page 12), press the R1 soft key to turn the light ring on or off.

Catalytic Recondition

From the 2nd Options Screen (Figure 15, page 12), press the R1 soft key to turn "cat_recon" on or off.

This feature is available on select oven models only, in order to help burn off excessive grease in the catalytic converter or surrounding airpath.

When enabled, a catalytic recondition cycle will be performed each time the oven is warmed up from cold. When the ON/OFF key is pressed, the oven will begin to climb to the catalytic recondition set-point (540ºF) for a 20-minute cycle.

⚠ CAUTION: During reconditioning, do not open the oven door, as the sudden addition of oxygen to the oven environment may cause any remaining food particles to ignite.

Once the displayed time expires, the oven will begin cooling down and display “Cooling to Setpoint. Please Wait.” The message and the oven temperature will continue to be displayed until the cook temperature has dropped to within 20ºF of the normal operating temperature. When the temperature reaches this level, the oven will be ready to operate.

The “reconditioning” feature doubles as the former “soak” mode, which ensures the cavity surfaces are warmed sufficiently as to not absorb heat away from food being cooked immediately after the oven reaches its set point temperature.

Test Mode - Testing Oven Parts

From screen 2 of the Info Mode (Figure 13, page 11), press the L1 soft key to access Test Mode (Figure 16, page 13). When prompted, enter the password 9 4 2 8 and press the Enter key. From Test Mode, the oven’s components can be tested independently, or a comprehensive/selective self-test can be run. Unless otherwise specified, idle airflow is set to 10% and the stirrer motor is turned on.

NOTE: To view fault counts, go to screen 1 of the Info Mode (Figure 12, page 11).

Magnetron Test

Press and hold the L1 soft key (Figure 17) to turn on the magnetrons. To turn off the magnetrons, release the L1 soft key.

Top Blower

Press the L2 soft key (Figure 17) to increase top blower speed in 10% increments. While the top blower is being tested, the bottom blower remains at 10% idle airflow.

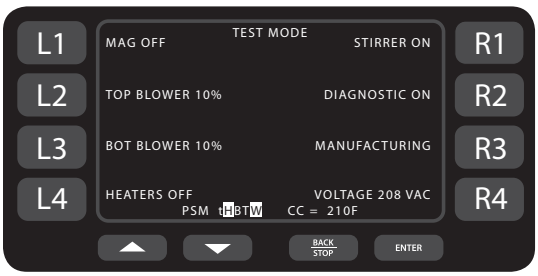


Figure 17: Test Mode

Bottom Blower

Press the L3 soft key (Figure 17) to increase bottom blower speed in 10% increments. While bottom blower is being tested, the top blower remains at 10% idle airflow.

Heaters

Press and hold the L4 soft key (Figure 17) to turn the heaters on. Release the key to turn them off.

Stirrer

Press the R1 soft key (Figure 17) to turn the stirrer on/off.

Status Indicators

Figure 17. The status indicators are located at the bottom of the Test Mode screen, and consist of:

- P = Primary switch (backlit = open)
- S = Secondary switch (backlit = open)
- M = Monitor switch (backlit = open)
- t = Magnetron thermostat (backlit = open)
- H = Heaters (backlit = off)
- B = Bottom blower (backlit = off)
- T = Top blower (backlit = off)
- W = Microwave (backlit = off)

In Figure 17, all three door switches are engaged (closed). The heaters are off, both blower motors are on, and microwave is not being used.

Turning Diagnostic Mode On/Off

Press the R2 soft key (Figure 17) to place the oven in Diagnostic Mode, in which the oven displays parameters during a cook cycle, including:

- Event currently being cooked
- Time left per event
- % wave, % top air, and % bottom air
- Status indicators
- Group and recipe name
- CC temperature and set point

For normal oven operation, ensure Diagnostic Mode is turned off.

Manufacturing Mode

From Test Mode, press the R3 soft key (Figure 17, page 14) to place the oven in Manufacturing Mode (Figure 18). When in Manufacturing Mode, the following tests and settings can be accessed:

- Microwave leakage test
- Microwave power test (factory use only)
- Burn in (factory use only)
- Serial number edit
- Self test (factory use only)
- Enable/disable voltage display (factory use only)
- Erase/default oven settings
- Temperature measurement (°F or °C)

Serial Number Edit

Press the L4 soft key (Figure 18) to access the "Edit Serial Number" screen (Figure 19). To edit the serial number:

- Use the number/letter keys to change a character. After one second, the cursor will advance to the next character.
- Press the R2 soft key to advance to the next character.
- Press the L2 soft key to return to the previous character.
- Press the R4 soft key to save the changes or the L4 soft key to cancel.

Changing Temperature Measurement Setting

Press the R4 soft key (Figure 18) to change the temperature measurement to Fahrenheit or Celsius.

Microwave Leakage Test

Press the L1 soft key (Figure 20) to initiate the microwave leakage test. The oven will warm up to 500°F (260°C). When warmup is complete, insert the water load. Follow the steps on page 22.

Erase/Default Oven Settings

⚠ CAUTION: Settings cannot be retrieved once an erase option is confirmed.

Press the R3 soft key (Figure 18) to access the "Erase" screen (Figure 21). From the "Erase" screen,

- Press the L2 soft key to erase counters and fault logs.
- Press the R2 soft key to erase counters, fault logs, menu settings, temperature settings, serial number, date, and time. Doing so will also default all oven options (page 12 for more detail) to OFF, with the exception of "load menu."

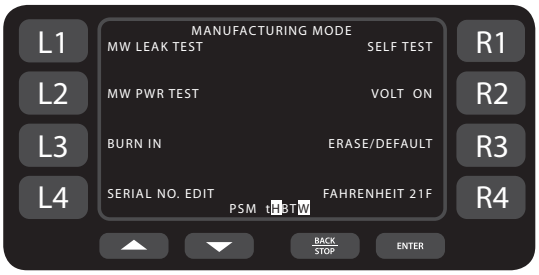


Figure 18: Manufacturing Mode

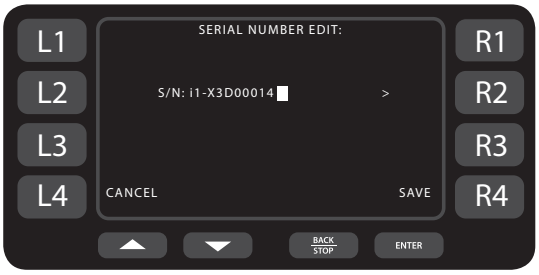


Figure 19: Serial Number Edit

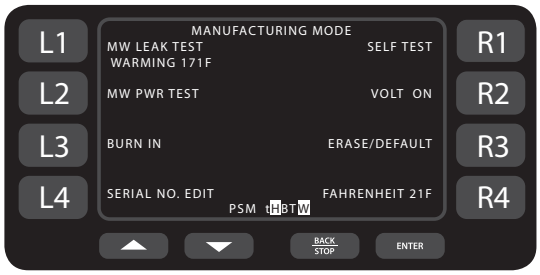


Figure 20: Microwave Leak Test

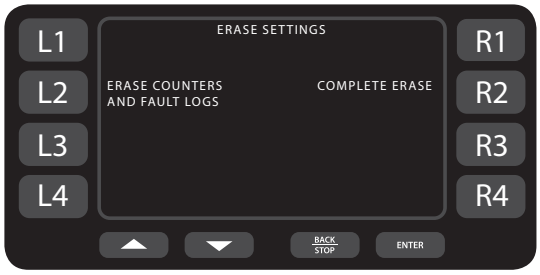


Figure 21: Erase/Default Oven Settings

Updating the Oven Menu

NOTE: If your oven receives updates from Oven Connect™, then manually updating the menu is not recommended.

NOTE: To update a menu, you may need to verify that access to the Load Menu screen is turned on. See the *Set Options Screen* section on page 12 for more details.

To load a menu to the oven,

1. Go to screen 2 of the Info Mode (Figure 13, page 11).
2. Press the R1 soft key to access the Load Menu screen.
3. Insert the smart card (Figure 23).
   - White for SOTA
   - Gray for SBK NGO
4. From the Load Menu screen, press the L1 soft key (Figure 22).
5. Verify the oven beeps and reads FINISHED.

Making a Copy of the Oven Menu

NOTE: To make a copy of the oven menu, you may need to verify that access to the Load Menu screen is turned on. See the *Set Options Screen* section on page 12 for more details.

To save a copy of the menu to a smart card,

1. Go to screen 2 of the Info Mode (Figure 13, page 11).
2. Press the R1 soft key to access the Load Menu screen.
3. Insert the smart card (Figure 23).
   - White for SOTA
   - Gray for SBK NGO
4. From the Load Menu screen, press the L2 soft key (Figure 22).
5. Verify the oven beeps and reads FINISHED.

Figure 22: Loading...Finished

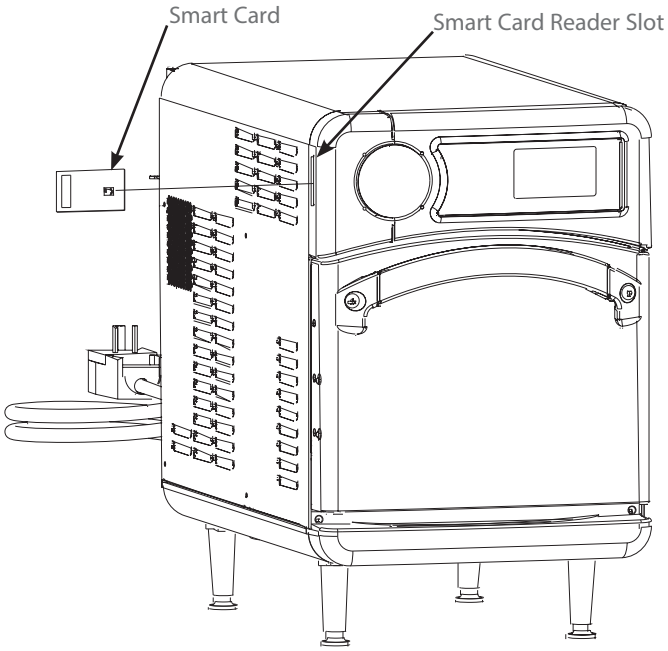


Figure 23: Inserting Smart Card

Updating the Oven Firmware

⚠ CAUTION: The oven will be inoperable if the firmware update is unsuccessful!

From the Oven Off screen,

1. Insert the gray smart card "1 of 3" (Figure 23, page 16).
2. When the oven is cooling down or off, press and hold the Info key until the oven resets (approximately 5 seconds).
3. The oven will produce a series of short beeps. When the oven beeps one long tone, insert card "2 of 3."
4. The oven will again produce a series of short beeps. When the oven beeps one long tone, insert card "3 of 3."
5. The oven will again produce a series of short beeps. When the oven beeps one long tone, remove the smart card.
6. The oven will restart, indicating the update is complete.

NOTE: If the update is unsuccessful, the display will remain off and the oven will beep one long, low tone. If the update fails multiple times, contact TurboChef as a card may be damaged.

Menu Structure

The oven allows use of either one or two set temperatures. Additionally, the SOTA can store up to 256 settings, while the SBK NGO can store 1,024. See Figure 24 below for the differences.

	SBK NGO	SOTA
Type of card	Gray	White
Groups	16 (8/temp)	16 (8/temp)
Items per group	32	16
Quantities per item	2	N/A
Total # of settings	1,024	256

Figure 24: SBK NGO Versus SOTA Menus

Overview of the Edit Mode

NOTE: If your oven receives updates from Oven Connect™, then manually updating the menu is not recommended.

To access the Edit Mode,

1. Enable it from the 1st Options Screen (Figure 14, page 12).
2. Press the On/Off key to return the oven to the "Cooling Down" or "Off" screen.
3. Press the On/Off key again to enter Edit Mode.

The Edit Mode serves three main purposes:

1. Edit set temperatures
2. Edit names of food groups, items, and "quantities"
3. Edit cook settings

Changing Set Temperatures

If a menu was loaded via Oven Connect™ or smart card (page 16), the temperatures are already set and do not need to be changed.

The set temperature should never be changed to compensate for over-cooking or under-cooking. If recipe settings are not cooking as desired, consult your menu developer, authorized distributor, or TurboChef Customer Support.

To change a set temperature,

1. Place the oven in Edit Mode (above).
2. Press the L2 soft key to change temperature 1 or L4 soft key to change temperature 2 (Figure 25).
3. Using the number keys, enter the new set temperature.
4. Press the Enter key to confirm the change, or the Back/Stop key to cancel.

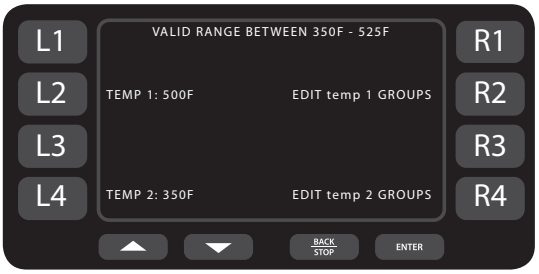


Figure 25: Temperature Edit Screen

Editing Recipe Settings

Changing Group/Item/Quantity Name

To change a food group, item, or quantity name:

1. Place the oven in Edit Mode (see page 17).
2. Press the R2 soft key to edit temperature 1 groups or the R4 soft key to edit temperature 2 groups (Figure 25, page 17).
3. Select the group that contains the item(s) you want to edit.
4. Select a food item.
5. Select a quantity (high-capacity menus only).
6. From the "Recipe Edit" screen (Figure 26), edit the food group name:
   - Use the number keys to change a character.
   - Press the R1 soft key to advance to the next character.
   - Press the L1 soft key to return to the previous character.
   - Press the R2 soft key to save changes.
7. Edit the recipe name:
   - Press the Down key to move to the "Recipe Name" field.
   - Use the instructions provided in step 6 to edit the recipe name.
8. If applicable, edit the quantity name:
   - Press the Down key to move to the "Quantity Name" field.
   - Use the instructions provided in step 6 to edit the quantity name.
9. Press the R2 soft key to save changes. For additional editing options, see adjacent.

Changing Cook Settings

To change cook settings,

1. Follow the steps in *Changing Group/Item/Quantity Name*, adjacent.
2. Use the number keys to adjust event settings:
   - % Time (0-100% in 1% increments). The sum of the percentages across six events must equal 100.
   - % Top Blower (10-100% in 10% incr.)
   - % Bottom Blower (10-100% in 10% incr.)
   - % Microwave (0-100% in 10% incr.)
3. Use the Down key to move the cursor to the "Warm Time" field.

NOTE: For ease of navigation, the R3 "Time" soft key jumps the cursor to the warm time field.

4. Use the number keys to adjust the cook time.
5. Press the R2 soft key to save changes.

NOTE: For the save to take effect, the cursor must be advanced past the field that was last edited.

6. If desired, press the R4 soft key to test-cook the new settings. In doing so, the oven may require additional warmup time.
7. When all editing is complete, return to the Set Options screen and turn off the Edit Mode (see page 12). This will allow access to the regular cook mode.

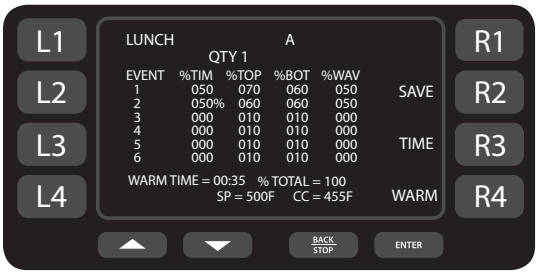


Figure 26: Recipe Edit Screen

Convection System

The convection system is designed to rapidly heat, clean, and recirculate air into the cook cavity.

This section contains information about the following components:
- Blower motor (bottom)
- Blower motor (top)
- Blower motor speed controller (BMSC)
- Heater elements
- Jetplate (bottom)
- Jetplate (top)
- Stirrer motor and assembly

For information on accessing and removing parts, see the Appendix.

Blower Motor (Bottom)

The bottom blower motor is a brushless AC-switch reluctance type and spins clockwise. Its top speed is 7100 RPM at 1 HP, and it is controlled by a proprietary controller.

The bottom blower motor can be tested in Test Mode (see page 14).

Blower Motor (Top)

The top blower motor is a brushless AC-switch reluctance type and spins counterclockwise. Its top speed is 7100 RPM at 1 HP, and it is controlled by a proprietary controller.

The top blower motor can be tested in Test Mode (see page 14).

Blower Motor Speed Controller (BMSC)

The motor controller is proprietary and will only operate the motors described above. It is controlled via 0-10 VDC speed command from the I/O control board and can be tested in Test Mode by testing the blower motors (see page 14). For additional troubleshooting, see page 33.

Heater Elements

The main convection heaters are sheathed-style and rated at 3000 watts at 208 VAC, with a resistance of 14.4 Ohms. The convection heaters are controlled by the K4/K5 solid state relay, and can be tested in Test Mode (see page 14).

Jetplate (Bottom)

The bottom jetplate channels air generated from the bottom blower motor into the cook cavity.

Jetplate (Top)

The top jetplate channels air generated from the top blower motor into the cook cavity. Before the air passes through the jetplate nozzles, it is mixed by a stirrer.

⚠ CAUTION: The top jetplate is ceramic. Be careful when removing or reinstalling it.

Stirrer Motor and Assembly

The stirrer is responsible for evenly distributing hot air and microwave that enters the cook cavity from the top. The stirrer is driven by a motor that remains on during a cook cycle or when the oven is in Test Mode. The stirrer motor turns off when the cook cavity temperature recedes below 150°F (66°C).

The stirrer motor can be tested in Test Mode (see page 14).

Troubleshooting

The following faults may occur in relation to the convection system:
- F1: Blower (see page 33)
- F2: Low Temp (see page 34)
- F6: EC Temp (see page 37)
- F7: Thermo (see page 37)
- F8: Heat Low (see page 38)

The following cooking performance issues may occur in relation to the convection system:
- Food not cooking properly (see page 41)

Oven Door

This section contains information about the following components:
- Oven door
- Interlock switches

This section also contains procedures for:
- Removing/reinstalling the oven door
- Adjusting the oven door
- Adjusting the primary, secondary, and monitor switches
- Measuring RF leakage for microwave safety

For information on accessing and removing parts, see the Appendix.

The oven door assembly consists of a shunt plate, skin, and handle. Each of these items can be serviced and replaced independently.

⚠ NOTE: The proper fit and adjustment of the oven door is essential for safe and reliable oven operation.

Removing/Reinstalling the Oven Door

To remove or reinstall the oven door, follow the steps below. For illustrations, see page A-2 of the Appendix.

1. Ensure the oven has cooled to 150°F (66°C).
2. Open the oven door to its full open position and insert rivets, screws, or nails as shown in Figure 27 to hold the hinges in the open position.
3. Remove the plastic caps and inset $^{5}/_{16}$" hex screws (2 per side). This will allow the hinge blocks to be removed together with the door.
4. If removing the door without the hinge blocks, remove the #8-32 screws (3 per side).
5. Carefully remove the oven door by pulling it away from the oven.
6. Reinstall (or replace) the door and/or hinge blocks, verifying that the door is parallel to the oven frame. If it is not parallel, adjust the door per the adjacent instructions.
7. From Test Mode, check the status indicators "P" "S" and "M" to verify the switches engage (door closed) and disengage (door open) properly. If they do not, adjust the switches per the instructions on page 21.
8. Complete a microwave leakage test (page 22).

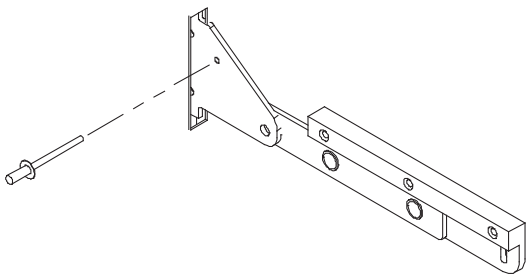


Figure 27: Insert Rivet/Screw/Nail to Keep Hinge Open

Adjusting the Oven Door

⚠ WARNING: This procedure is performed while the oven is hot. To avoid burns, be careful when adjusting the door.

1. Open the door and remove the plastic caps.
2. Ensure that the 3 screws on each side of the door are tight.
3. Loosen the hex screws and close the door.
4. Tap the center of the door to allow door and frame to align properly. The hinge springs will pull the door to the frame; do not push on either side, rather only in the center.
5. Tighten the screws and reinstall the caps.
6. Plug in the oven and perform a microwave leakage test (see page 22).

Critical Adjustment Notes

If the top or bottom of the door is rotated away from the oven cavity frame, the door is misaligned.

Corrective Action

1. Loosen the hex screws and push the door towards the flange.
2. The hinge springs will naturally pull the door to the flange. Tap the center to ensure a level surface and proper seal.

Continued on page 21.

NOTE: Do not push one end at a time, which could cause the opposite end to lift away from the flange.

3. Re-tighten the hex screws.
4. Pull the door open only 0.25" (6 mm) and let go of the handle.

The door must completely snap shut on its own. If the door sticks and force is needed to finish closing it, it is out of adjustment.

⚠ WARNING: Perform a microwave leakage test (page 22) after adjusting the oven door.

Interlock Switches

The primary, secondary, and monitor interlock switches engage and disengage in sequence to ensure a proper seal. When the door is opened, the switch sequence is P, S, M. Subsequently, the sequence is M, S, P when the door is closed.

Adjusting the Primary, Secondary, and Monitor Switches

⚠ WARNING: This procedure is performed while the oven is hot. To avoid burns, be careful when adjusting the switches.

Use the following procedure to adjust the primary, secondary, and monitor switches. The secondary switch is located on the left side hinge assembly and the monitor switch is located on the right side hinge assembly. The primary switch is located on the upper-left corner of the oven and utilizes an actuator (attached to the door) and toggle assembly (attached to the chassis) to engage (Figure 28). See page A-8 of the Appendix for switch assembly detail.

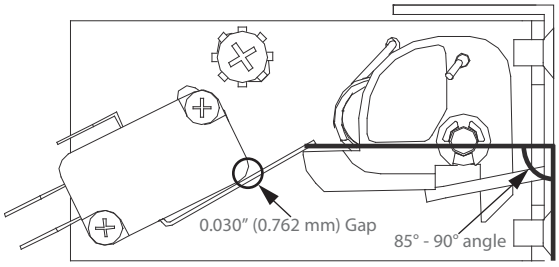


Figure 28: Primary Switch Adjustment

1. Ensure the oven has been at operating temperature for at least fifteen minutes.
2. If adjusting the primary switch, confirm the primary switch's latch toggle is in the correct position.
   a. Visually inspect the latch toggle position and verify it is angled at no less than 85° and no more than 90° in reference to the front flange (oven face). See Figure 28.
   b. If the toggle is less than 85° or greater than 90°, correct the toggle's position by installing a spacer/shim (the more distance from the flange, the less angle on the toggle):
   - NGC-1169-1: Shim, 0.030" (0.762 mm)
   - NGC-1169-2: Shim, 0.045" (1.143 mm)
   c. Verify the position of the toggle by opening and closing the oven door several times.
3. Adjust the switch(es):
   a. Enter Test Mode (page 14).
   b. Open the oven door and verify P, S, and M disengage in sequence.
   c. Close the oven door and verify M, S, and P engage in sequence.
   d. If the switches do not engage or disengage in sequence, close the door and adjust the necessary switch(es) by loosening the two #4-40 screws and #8-32 screw until the proper sequence is achieved.

NOTE: DO NOT allow the switch paddle to rest on the body of the switch in the closed door position. The final adjustment requires a minimum of a 0.030" (0.762 mm) gap to avoid over-travel and bent/damaged switches.

4. Open and close the door several times to verify the switch gap.
5. Energize the microwave system and open the oven door.
6. Verify the W indicator is backlit, meaning the microwave system turns off when the door is open.
7. Perform a microwave leakage test (page 22).

Measuring RF Leakage for Microwave Safety

⚠ WARNING: This procedure requires work with hot surfaces and water loads. To avoid burns, be careful when testing.

An RF (microwave) leakage test must be performed at the conclusion of the following service tasks:

- Door removal, replacement and/or adjustment
- Waveguide removal and/or replacement
- Magnetron removal and/or replacement
- Door switch adjustment and/or replacement

⚠ WARNING: If the unit fails the microwave leakage test (leakage greater than 5mW/cm^2), the oven must be taken out of service immediately until the defect is corrected. In addition, the CDRH Regulation 21 Subpart C, 1002.20 requires that leakage readings of over 5mW/cm^2 must be reported to the manufacturer.

To measure RF leakage,

1. Turn the oven on (page 8) and allow it to warm up to the set temperature (approximately 15 minutes if the oven starts cold).
2. Once the oven has warmed up, place the oven in Test Mode (see page 14). From Test Mode, select Manufacturing Mode.
3. From the Manufacturing Mode screen, select "MW Leak Test" and follow the instructions on the screen (also detailed in the following steps).
4. Place a water load into the cook cavity. The water load must conform to the following specifications:
   - Volume: 275 ml ± 15 ml
   - Temperature: 68ºF ± 9ºF (20ºC ± 5ºC)
   - Vessel: Low form, 600 ml beaker with an inside diameter of approximately 3.35" (85 mm) and made of Pyrex or equivalent.
5. Close the oven door and press the Enter key. The microwave system will turn on.
6. Measure microwave emission around the door as shown in Figure 29, moving the meter sensor at 0.5 inches/second.
7. As microwave leakage is observed while moving the sensor, note any meter spike areas that come close to 5mW/cm^2 for later re-measurement.
8. Replace the water load every 60 seconds until the test is completed, and also after scanning the door.
9. Close the oven door and return the meter probe to any "meter spike" areas and allow the probe to remain in the "spike" area for 17 seconds. Note the highest reading obtained.

NOTE: There may be several places on the door where this procedure needs to be done. If so, start out with a fresh water load each time a new area is measured, or if measurement of an area takes longer than 60 seconds.

10. After each test is complete, open the oven door and dispose of the hot water.

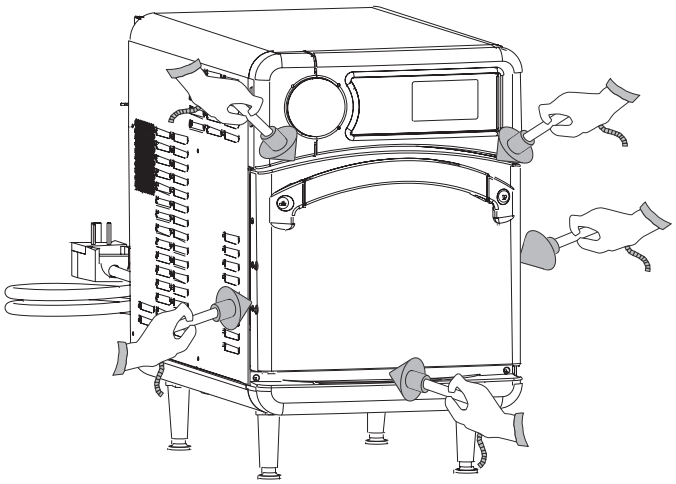


Figure 29: Survey Meter Placement

Troubleshooting

The following faults may occur in relation to the oven door:

- F4: Monitor (see page 36)

The following issues may occur in relation to the oven door:

- "Cook Door Open" message when door is closed (see page 39)

Microwave System

The NGO oven employs left and right microwave systems. In the case of an over-current situation, the F3 fuse will blow, shutting off both systems immediately.

NOTE: The Single Magnetron Sota oven utilizes a single microwave system.

This section contains information about the following components:

- Capacitors
- Filament transformers
- High-voltage transformers
- High-voltage diodes
- Magnetrons
- Stirrer motor and assembly
- Waveguides

This section also contains procedures for:

- Testing a capacitor
- Wiring the filament transformers
- Testing a filament transformer
- Testing a high-voltage diode
- Wiring the high-voltage transformers
- Testing a high-voltage transformer
- Testing a magnetron for an open/shorted filament

For information on accessing and removing parts, see the Appendix.

Capacitors

- Capacitor rating is 0.91uF, 2500 VDC for all 60 Hz installations (except Japan).
- Capacitor rating is 1.15uF, 2500 VDC for all 50 Hz installations.
- Capacitor rating is 0.85uF, 2500 VDC for 60 Hz Japan installations.

Testing a Capacitor

⚠ DANGER: Never attempt any measurement of the capacitors while they are enabled. Lethal voltage will be present. Measure only in compliance with these procedures.

1. Disconnect the oven from the power source.
2. Fully discharge the capacitor.
3. Isolate the capacitor from the circuit.
4. Check for an open or shorted capacitor by placing ohmmeter leads between the capacitor terminals:
   - Escalating ohm readings = capacitor OK
   - Constant infinite resistance = capacitor open
   - Constant very low resistance = capacitor shorted
5. If the capacitor is not open or shorted, set the meter to measure capacitance and again place the leads between the capacitor terminals. The meter reading should equal the label value, plus or minus 10%. If not, replace the capacitor.

NOTE: The Single Mgnetron Sota uses only one capacitor.

Filament Transformers

For better operation and reliability, the oven uses separate transformers in order to preheat the magnetron filament.

The control energizes the filament transformers for approximately five seconds prior to energizing the microwave circuit via the high-voltage transformers. When in operation, the filament transformers supply approximately 3.15 VAC at 10 amps to each magnetron filament. The filament transformers are controlled via the K1 relay.

NOTE: The Single Mgnetron Sota uses only one fialment transformer.

Wiring the Filament Transformers

The installation of filament transformers is straightforward. Filament transformers are wired in-phase and in-line. Refer to the schematic on page 45, detailing the proper wiring.

NOTE: The Single Mgnetron Sota uses only one fialment transformer.

To verify correct wiring (North America), measure the voltages between terminals 1 & 2 and 1 & 3 on FT1 and FT2. The voltages must be 208 and 240 VAC respectively.

NOTE: The orange wire always goes to terminal 3 on US models.

To verify correct wiring (International), measure the voltage between the taps on FT1 and FT2. The voltage must be 230 VAC.

High-Voltage Transformers

High-voltage transformers are ferro-resonant, which limits faulty currents and minimizes magnetron power changes due to input voltage changes. The high-voltage transformer supplies the high voltage for the voltage doubler circuit. They are controlled via the K8 relay.

NOTE: The Single Mgnetron Sota uses only one high voltage transformer.

Wiring the High-Voltage Transformers

⚠ DANGER: Never attempt to wire or measure the secondary voltage values of the high-voltage transformers. Lethal voltage will be present.

The proper reinstallation of a high-voltage transformer is critical. Upon removing a high-voltage transformer, make sure to note where each wire was installed. Refer to the oven schematic (page 45) for wiring detail.

As shown in the schematic, transformers are installed mirror opposite and wired 180º out-of-phase. It is essential for longevity that the high-voltage transformers remain 180º out-of-phase. This can be checked by placing a volt meter across terminals T1-1 and T2-1 (primary voltage).

NOTE: The Single Mgnetron Sota uses only one high voltage transformer.

With the microwave system energized, the volt meter will read the incoming voltage (different readings for different electrical installations). If the meter reads 0 VAC, the high-voltage transformers are most likely wired in-phase. As a last check, energize the microwave system and verify the voltages between the taps on each high-voltage transformer.

The wiring issue must be corrected prior to returning the oven to service, as the voltages must be:

- NORTH AMERICA: 208 VAC between 1 & 2 and 240 between 1 & 3.
- INTERNATIONAL: 230 VAC

NOTE: The orange wire always goes to terminal 3 on US models.

Testing a Filament or High-Voltage Transformer

⚠ DANGER: Never attempt to measure the secondary voltage values of the HV transformers. Lethal voltage will be present.

1. Disconnect the AC power source and discharge the high-voltage capacitors.
2. Disconnect all the wires in question going to and from the transformer.
3. Use an ohmmeter to check the impedance of the primary and secondary winding. Refer to Figure 31, page 25 to determine if the transformer is okay. If the resistance is different than the table indicates, replace the transformer.

High-Voltage Diodes

The high-voltage diode (Figure 30) is assembled by connecting several 1000-1500 volt semi-conductor diodes in a series to increase the reverse voltage capability. In the circuit, the high-voltage diode conducts to prevent the filament voltage from becoming positive, thus as the high-voltage winding of the transformer goes to a peak of 2400 volts, the high-voltage capacitor is charged to 2400 volts.

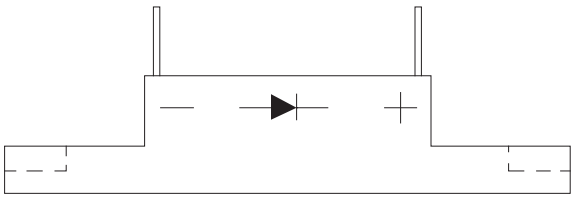


Figure 30: High-voltage Diode

When the high-voltage winding starts to go toward negative, the high-voltage diode becomes non-conducting with the charged high-voltage capacitor in series with the high-voltage winding. When the transformer gets to its negative peak of -2400 volts, the voltage applied to the filament is -4500 volts. The high-voltage diodes are rated at 16 kVDC.

NOTE: The Single Mgnetron Sota uses only one diode.

High Voltage Transformers	Primary Voltage, Frequency, Taps, and Resistance	Secondary Taps and Resistance
NGC-3062-1	208 VAC, 60 Hz, 1 & 2, 0.819–1.001 Ω 240 VAC, 60 Hz, 1 & 3, 0.972–1.188 Ω	4, Ground, 53.60–65.52 Ω
NGC-3062-2	230 VAC, 50 Hz, 1 & 2, 0.972–1.188 Ω	3, Ground, 57.52–70.30 Ω
Filament Transformers	**Primary Voltage, Frequency, Taps, and Resistance**	**Secondary Taps and Resistance**
NGC-3061-1	208 VAC, 60 Hz, 1 & 2, 17.49–21.37 Ω 240 VAC, 60 Hz, 1 & 3, 20.61–25.19 Ω	4, 5, very low resistance - if reading is open, transformer has failed.
NGC-3061-2	230 VAC, 50 Hz, 1 & 2, 18.99–23.21 Ω	3, 4, very low resistance - if reading is open, transformer has failed.

Figure 31: High Voltage and Filament Transformer Resistance Table

Testing a High-Voltage Diode

⚠ DANGER: Never attempt to measure high voltage directly. Death or serious injury could result.

1. Disconnect the oven from the power source.
2. Fully discharge the capacitors.
3. Connect the voltage meter in series with high-voltage diode.
4. Using a multimeter set to DC voltage, connect one meter lead to one side of a 9-volt battery and the other lead to one side of the high-voltage diode.
5. Connect the other side of the 9-volt battery to the other side of the high-voltage diode. DC voltage should be present on the meter in only one direction.
6. Switch the meter leads on the high-voltage diode, which will cause the opposite reading to be visible. Depending on the voltage of the battery, voltage between 5-7 VDC should be present in only one direction and 0-0.1 VDC in the other direction.

Magnetrons

Figure 32. Magnetrons supply the RF energy at 2.45 GHz and begin to oscillate when they are supplied with approximately 4.1 kVDC at approximately .350 mA. During operation, each magnetron will output a nominal 1 kW of power.

Perform a microwave leakage test (page 22) after installing a new magnetron or reinstalling an old one.

⚠ CAUTION: Do not allow debris to enter the waveguides when servicing the magnetrons.

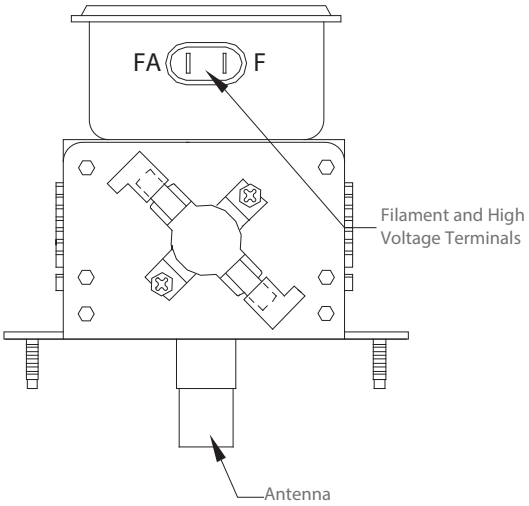


Figure 32: Magnetron

Testing a Magnetron for an Open/Shorted Filament

⚠ DANGER: The only safe way to test a magnetron is by a resistance test of its filament. Never attempt to measure the magnetron using any other method while the microwave system is on. Death or serious injury could occur.

1. Disconnect the AC power source and discharge the high-voltage capacitors.
2. Isolate the magnetron from the circuit by removing the wires from the F and FA terminals. Figure 32.
3. An ohmmeter connected between the filament terminals (F, FA) should indicate a reading of less than 1 ohm. Figure 32.
4. A continuity check between either filament terminal and the magnetron chassis should indicate an infinite resistance (open).

⚠ CAUTION: Do not allow debris to enter the waveguides when servicing the magnetrons.

Stirrer Motor and Assembly

The stirrer is responsible for evenly distributing hot air and microwave that enters the cook cavity from the top. The stirrer is driven by a 3.6 RPM motor, which remains on during a cook cycle or when the oven is in Test Mode.

The stirrer motor can be tested in Test Mode (see page 14).

⚠ CAUTION: Do not allow debris to enter the waveguides when servicing the stirrer.

Waveguides

The waveguides channel microwave into the cook cavity. If debris or contamination gets into the waveguides, the life of the magnetrons may be shortened. Be careful to not allow debris into the waveguides when servicing the magnetrons or stirrer assembly.

NOTE: The Single Mgnetron Sota uses only one waveguide.

Troubleshooting

The following faults may occur in relation to the microwave system:

- F3: Magnetron Current Low (see page 35)
- F5: Magnetron Over Temperature (see page 36)

The following issues may occur in relation to the microwave system:

- Electrical component failure (blank or scrambled display, damaged control board, etc.)
- Food not cooking properly (see page 41)

Control System

This section contains information about the following components:

- Control board
- Cooling fans
- Display
- Electrical compartment cooling fan thermostat
- Electrical compartment thermocouple
- EMI filter
- Ethernet extension cable
- Fuses
- High-limit thermostat
- Keypad
- LED Light Ring (Sŏta only)
- Magnetron thermostats
- Power supply, 24 VDC
- Relay (K1 - Filament)
- Relay (K2 - Magnetron cooling fans)
- Relay (K3 - Stirrer)
- Relay (K6 - Voltage)
- Relay (K7 - Monitor)
- Relay (K8 - Anode)
- RTD, 3.0”
- Smart card reader
- Solid state relay (K4/K5 - Heater)
- Speaker
- Voltage sensor
- Wire harness

Control Board

The control board controls each electrical component of the oven. See page 45 for a schematic. 24 VDC can be measured at pin 2 of the J7 connector to confirm control voltage is being applied.

When replacing a control board, determine if the oven is connected to the store’s network. If so:

1. Record the oven’s network information:
   a. While the oven is off or cooling down, press the INFO key.
   b. Press the DOWN arrow key to scroll to screen 2.
   c. Select “Set Options.”
   d. Select “Network Setup.”
2. Record the IP, Mask, Gateway, DNS1 and DNS2 numbers.
3. Input these numbers after replacing the control board.

If the control board is damaged to the point of not allowing access to the Network Setup screen, have the store contact its Oven Connect administrator to obtain the proper network settings.

Cooling Fans

There are seven total cooling fans. The three fans across the top of the back panel are inlet fans and the other four are outlet fans.

The four electrical compartment cooling fans on the back panel and the one underneath the oven are actuated by the cooling fan thermostat when the temperature of the electrical compartment reaches 120ºF (49ºC). The two magnetron cooling fans (located on each side of the oven) are actuated by the K2 relay when the magnetrons are in operation, and remain on for four minutes and fifteen seconds after the magnetrons turn off. They operate at:

- 208/240 VAC (60 Hz with voltage sensing)
- 220 VAC (60 Hz with no voltage sensing)
- 230 VAC (50 Hz installations)

Display

The TFT display is the primary user interface. Both 24 VDC and 5 VDC are supplied from the control board through the 3-pin power cable. 24 VDC is used for the backlighting and 5 VDC is used for the logic systems.

Electrical Compartment Cooling Fan Thermostat

The cooling fan thermostat actuates the five rear cooling fans when the electrical compartment temperature reaches 120ºF (49ºC).

Electrical Compartment Thermocouple

The electrical compartment thermocouple is part of the control board and measures the temperature of the electrical compartment. If it is above 158ºF (70ºC), an F6: EC TEMP fault will display. The control board checks the electrical compartment temperature once every 60 seconds.

EMI Filter

The EMI filter helps suppress the amount of RF interference emitted by the oven.

Ethernet Extension Cable

The ethernet extension cable exits the oven at the back panel and allows the oven to be connected to a local network, in case the customer desires remote programming and oven diagnostics reporting.

Fuses

The F1 and F2 fuses are 12-amp, ATMR, class CC. The F3 fuse is 20-amp, ATMR.

The F1 fuse (via blue wire) and F2 fuse (via brown wire) are designed to blow if an over-current situation is encountered by the motor controller, any cooling fan, either filament transformer, power supply, or stirrer motor. The F3 fuse is designed to blow in case of an over-current situation relative to the microwave system (magnetron, high-voltage transformer, diode, capacitor).

High Limit Thermostat

The high limit thermostat is a 250 VAC, 3-pole, manual-reset thermostat with a trip point of 572ºF (300ºC). The thermostat interrupts power to the main convection heater in the event of an abnormal condition. Reset the high-limit thermostat by pressing the reset button (Figure 33).

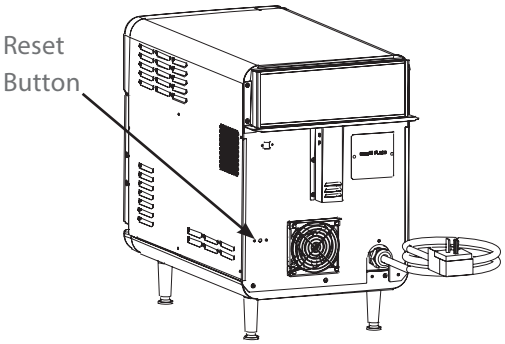


Figure 33: High-Limit Reset Button

Keypad

The keypad is a 8 x 11 matrix membrane switch. For details on key functions, see page 7.

LED Light Ring (Sŏta only)

The LED light ring provides visual cues in regards to oven operation, and counts down the final 30 seconds of each cook cycle.

Magnetron Thermostats

The magnetron thermostats are “open-on rise.” They are designed to open at 270ºF (132ºC), which triggers an F5 fault.

NOTE: Except for Single Magnetron Sota Ovens (where only one magnetron thermostat is used) the magnetron thermostats are wired in series. If one opens, the control will switch off both magnetrons until the open thermostat closes. The thermostats are self-resetting.

Power Supply

The power supply outputs 24 VDC at 40 watts to the control board and relays.

Relay - K1 Filament

The K1 relay is a 240 VAC, 24 VDC coil, 20 amp, sealed single-pole relay. It switches power to the filament transformers.

Relay - K2 Magnetron Cooling Fans

The K2 relay is a 240 VAC, 24 VDC coil, 20 amp, sealed single-pole relay. It switches power to the magnetron cooling fans when the magnetron filaments are actuated. Power is switched off after four minutes and fifteen seconds.

NOTE: The four-minute, fifteen-second timer starts over each time the magnetron filaments are actuated.

Relay - K3 Stirrer Motor

The K3 relay is a 240 VAC, 24 VDC coil, 20 amp, sealed single-pole relay. It switches power to the stirrer motor.

Relay - K6 Voltage

The K6 relay is a 240 VAC, 30 amp, three-pole, double-throw, 24 VDC relay coil. Operational in North America only, it switches between 208 and 240 VAC on the HV transformer and filament transformer taps (depending on incoming voltage). Through the voltage sensor, the oven defaults to the 240V position and switches to 208 if less than 222 volts is detected. 230V/400V international ovens and all Japan models utilize the N.C. contacts of the relay to power the microwave transformers.

Relay - K7 Monitor

The K7 relay is a 240 VAC, 30 amp, double-pole, double-throw, 24 VDC relay coil. It shorts L1 and L2 if the monitor switch opens before the primary or secondary switches.

Relay - K8 Anode

The K8 relay is a 240 VAC, 30 amp, double-pole, double-throw, 24 VDC relay coil. It switches power to the high-voltage transformers.

RTD

The RTD measures the temperature of the heater element. If the display reads "999°F/C", the RTD is open, resulting in an F7 fault. See page 37 for troubleshooting.

Testing Procedure:

1. Disconnect the RTD from the control harness.
2. Place the RTD in ice water for two minutes.
3. Take a resistance reading of the RTD.
4. If RTD resistance is not 100 Ω, the RTD is defective and must be replaced.

NOTE: Use Figure 34 below to determine resistance readings at temperatures other than freezing.

Smart Card Reader

The smart card reader allows the oven operator to load menus and firmware updates from a smart card. An oven's menu can also be saved to a smart card. For instructions, see page 16.

Solid State Relay - K4/K5 Heater

The solid state relay is a 240 VAC, dual 40-amp relay. K4 switches power to heater one, and K5 switches power to heater two.

Speaker

The speaker provides audible feedback to the oven operator whenever a key is pressed or a task (such as a cook cycle) is completed.

Voltage Sensor

For North America models only. Voltage selection is completed at the time of manufacture; however, if incoming voltage for the store is different than the preset voltage, the operator will be required to select either 208 or 240 after turning on the oven. The correct voltage will be enlarged on the screen, identifying which option to select.

Wire Harness

The wire harness distributes power to the oven's electrical components. See page 45 for a schematic.

Troubleshooting

The control system could potentially be related to the cause of any fault (see pages 33-38 for detailed fault troubleshooting).

The control system might also be related to any issue diagnosed in the section "Non-Fault Code Troubleshooting" on pages 39-44.

°F	0°	+20°	+40°	+60°	+80°	+100°	+120°	+140°	+160°	+180°	+200°
0°	90.03 Ω	97.39 Ω	101.74 Ω	106.07 Ω	110.38 Ω	114.68 Ω	118.97 Ω	123.24 Ω	127.50 Ω	131.74 Ω	135.97 Ω
+200°	135.97 Ω	140.18 Ω	144.38 Ω	148.57 Ω	152.74 Ω	159.90 Ω	161.04 Ω	165.17 Ω	169.29 Ω	173.39 Ω	177.47 Ω
+400°	177.47 Ω	181.54 Ω	185.60 Ω	189.64 Ω	193.67 Ω	197.69 Ω	201.69 Ω	205.67 Ω	209.64 Ω	213.60 Ω	217.54 Ω
+600°	217.54 Ω	221.47 Ω	225.38 Ω	229.28 Ω	233.17 Ω	237.04 Ω	240.90 Ω	244.74 Ω	248.57 Ω	252.38 Ω	256.18 Ω
°C	0°	+10°	+20°	+30°	+40°	+50°	+60°	+70°	+80°	+90°	+100°
0°	100.00 Ω	103.90 Ω	107.79 Ω	111.67 Ω	115.54 Ω	119.40 Ω	123.24 Ω	127.07 Ω	130.89 Ω	134.70 Ω	138.50 Ω
+100°	138.50 Ω	142.29 Ω	146.06 Ω	149.82 Ω	153.58 Ω	157.31 Ω	161.04 Ω	164.76 Ω	168.46 Ω	172.16 Ω	175.84 Ω
+200°	175.84 Ω	175.91 Ω	183.17 Ω	186.82 Ω	190.45 Ω	194.07 Ω	197.69 Ω	201.29 Ω	204.88 Ω	208.45 Ω	212.02 Ω
+300°	212.02 Ω	215.57 Ω	219.12 Ω	222.65 Ω	226.17 Ω	229.67 Ω	233.17 Ω	236.65 Ω	240.13 Ω	243.59 Ω	247.04 Ω

Figure 34: Temperature/Resistance Relationship Class B. Resistance @ 0°C = 100.0, Alpha = 0.003850

Filtering System

This section contains information about the following components:

- Catalytic converter
- Air filter
- Vent catalyst

Catalytic Converter

The catalytic converter, a VOC type catalyst, is located behind the inside cook cavity wall and is responsible for cleaning the recirculating airflow. The catalyst functions by substantially lowering the combustion temperature of grease entrained in the air path to approximately the same temperature of the airflow; thus the grease burns and breaks down into CO_2 and H_2O as it passes through the catalytic converter. The catalyst will operate most efficiently at temperatures above 475°F (246°C).

The catalyst material is very sensitive to certain chemical compounds. Irreversible damage can occur if the catalyst is exposed to cleaning chemicals containing phosphates, NaOH, silicates, Na and Potassium Salts. These chemicals are found in most commercial degreasers and cleaners; therefore, only TurboChef Oven Cleaner should be used.

⚠ CAUTION: Clean the catalytic converter with TurboChef Oven Cleaner and rinse thoroughly with distilled water. Let the catalytic converter air dry before reinstalling. If TurboChef Oven Cleaner is not available, use only distilled water.

Air Filter

The filter is located on the back of the oven. It helps prevent debris from getting into the electrical compartment through the cooling fans. This component requires scheduled maintenance and occasional replacement, as it must be kept clean and in good working condition to ensure proper air circulation to the electrical components of the oven. See page 5, step 4 for details.

Vent Catalyst

In addition to the main catalytic converter, the NGO oven contains a secondary catalyst in the vent tube path. This catalyst further assists in the breakdown of grease and particulate matter before the excess air enters the atmosphere.

Troubleshooting

The following issues may occur in relation to the filtering system:

- F9: CC Temp (if the catalyst is clogged with grease and debris - see page 38)
- Fire in the cook cavity (if catalytic converter is clogged and oven is not regularly cleaned).
- Electrical component failure (if filter is not present or is clogged).
- Undesirable flavor transfer.
- Undesirable odor emissions.

Overview of Troubleshooting

This section contains information on the following:

- Fault code descriptions
- Fault code troubleshooting
- Non-fault code troubleshooting

For information on accessing Test Mode, see page 14. For information and illustrations on replacing components, see the appendix.

Fault Code Descriptions

To view the fault log:

1. While the oven is cooling down or off, press the INFO key to access the Info Mode.
2. From Screen 1 of the Info Mode (Figure 12, page 11), press the R3 soft key to view the fault log.
3. To view time stamps of each fault occurrence, press the soft key adjacent to the fault code.

F1: Blower Running Status Bad

This fault is displayed when the motor controller indicates no running status.

The motors and motor controller are monitored continuously in all modes with special handling in the Test Mode (page 14). If a fault is detected, the control will terminate a cook cycle and display "F1: Blower."

Upon turning on the oven, the control will attempt to restart the motors. If the restart of both motors is successful, the fault code will be cleared from the display. The fault is also cleared from the display at the onset of cooking or when a blower motor is tested in Test Mode.

F2: Cook Temperature Low

This fault is displayed if the cook cavity temperature is more than 84ºF (47ºC) below the set temperature after five seconds into a cook cycle. The fault is cleared from the display at the onset of cooking if the cook cavity temperature is within 84ºF (47ºC) of the set temperature or when the heater is tested in Test Mode (page 14).

F3: Magnetron Current Low

This fault is displayed when the current transformer (CT) on the I/O control board detects less than 10 amps. The fault is monitored when the microwave is on during a cook cycle or in Test Mode.

The fault is cleared from the display at the onset of a cook cycle if the CT detects 10 amps, or when the magnetrons are successfully energized in Test Mode.

F4: Door Monitor Defective

This fault is displayed when the control detects that the monitor interlock switch unlatches before the primary or secondary interlock switches. In addition, this fault will blow the F3 fuse if the microwave high voltage system is energized when the fault occurs. The fault is cleared from the display when the oven is powered off and then back on.

NOTE: Door interlock switches are in parallel. See the oven schematic, page 45. The fault is monitored during a cook cycle and in Test Mode when the microwave is on.

F5: Magnetron Over Temperature

This fault is displayed when either magnetron thermostat reaches 212ºF (100ºC).

The thermostats will reset automatically, and are wired in series. The fault is cleared from the display at the onset of a cook cycle if the thermostat is closed.

NOTE: The Single Mgnetron Sota uses only one magnetron thermostat.

F6: Electrical Compartment Temperature High

This fault is displayed when the EC thermocouple exceeds 158ºF (70ºC). The EC temperature is monitored once per minute.

The fault is cleared from the display if on the next check, the EC thermocouple temperature is below 158ºF (70ºC).

F7: RTD Open

This fault is displayed when the control detects that the RTD is "open." The display will show a reading of "999ºF/C," indicating the RTD is open.
The fault is cleared when the control detects continuity.

F8: Heat Low

This fault displays when the oven is warming up or during Test Mode if the cook cavity temperature fails to rise at least 14ºF (7ºC) within a given 30 seconds.

F9: Cook Cavity Temperature High

This fault will signal that the catalyst has "flashed" due to excessive grease. The fault occurs when the RTD senses +650°F (343°C) for more than 40 seconds but less than 2 minutes. The fault will only appear in the fault log and will not terminate a cook cycle upon discovery.

Fault Code and Description	When Active				Refer to...
	Warmup	Idle	Cooking	Test Mode	
F1: Blower Running Status Bad	✔	✔	✔	✔	Page 33
F2: Cook Temperature Low			✔		Page 34
F3: Magnetron Current Low			✔	✔	Page 35
F4: Door Monitor Defective			✔	✔	Page 36
F5: Magnetron Over Temperature			✔	✔	Page 36
F6: EC Temperature High	✔	✔	✔	✔	Page 37
F7: RTD Open	✔	✔	✔	✔	Page 37
F8: Heat Low	✔			✔	Page 38
F9: Cook Cavity Temperature High			✔	✔	Page 38

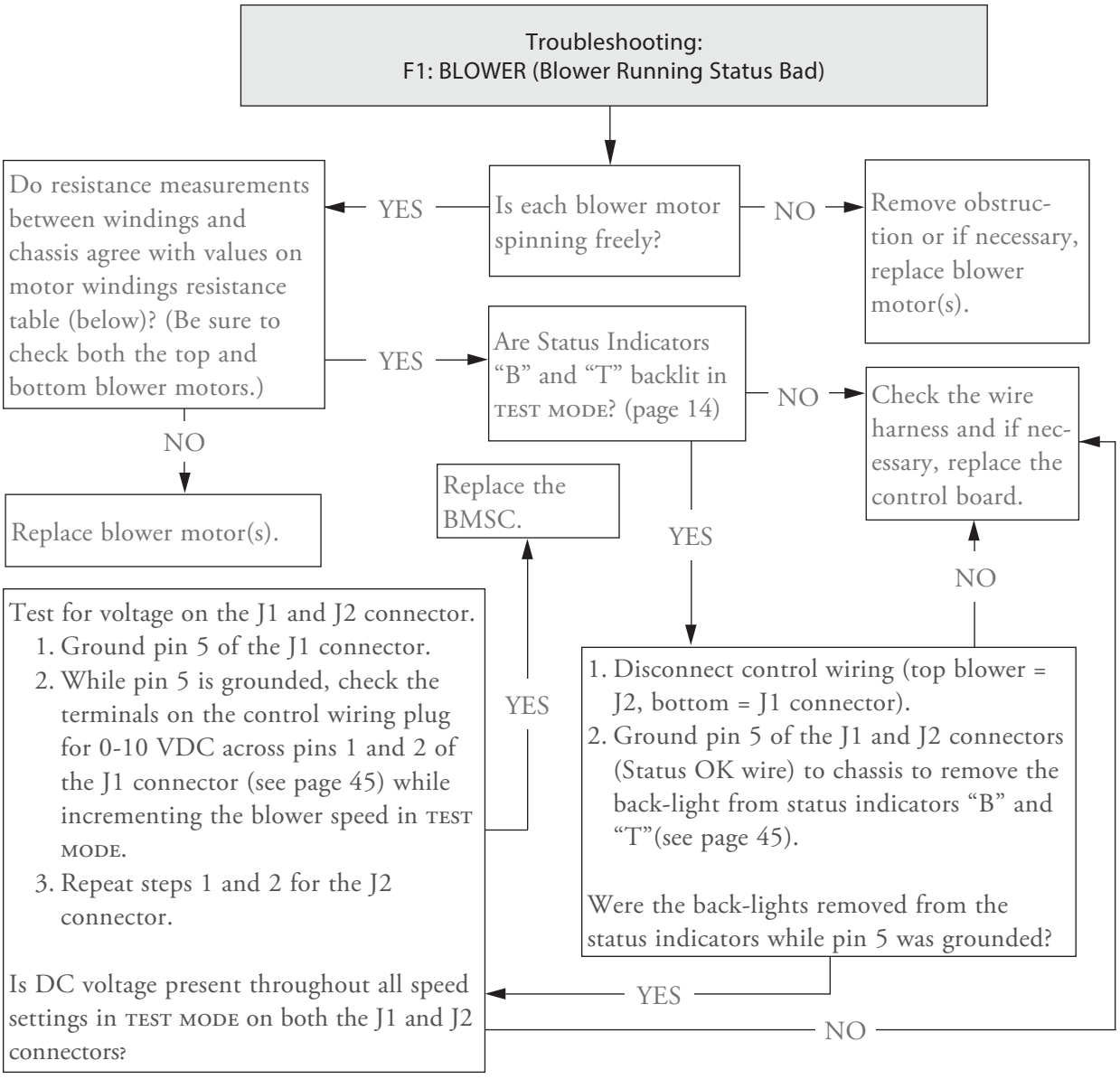
Figure 35: Fault Code Table

Fault codes are listed in order of hierarchy. For example, if during cooking the oven experiences an F1 and F2 fault, the oven will report only the F1 fault because the software will halt all actions upon discovering the F1 fault.

Fault codes F1 - F5 and F7 will terminate a cook cycle upon discovery.

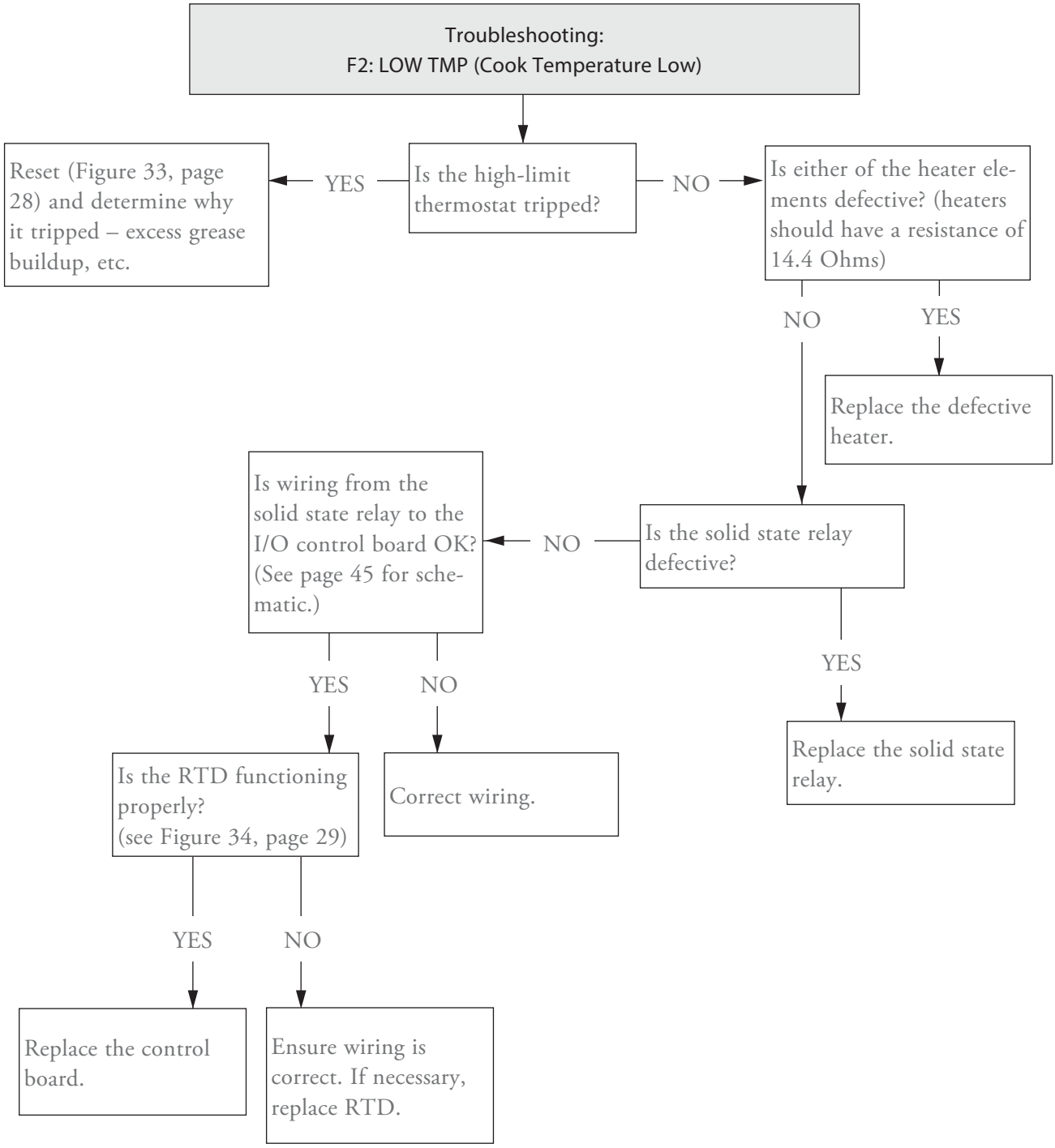
Fault Code Troubleshooting

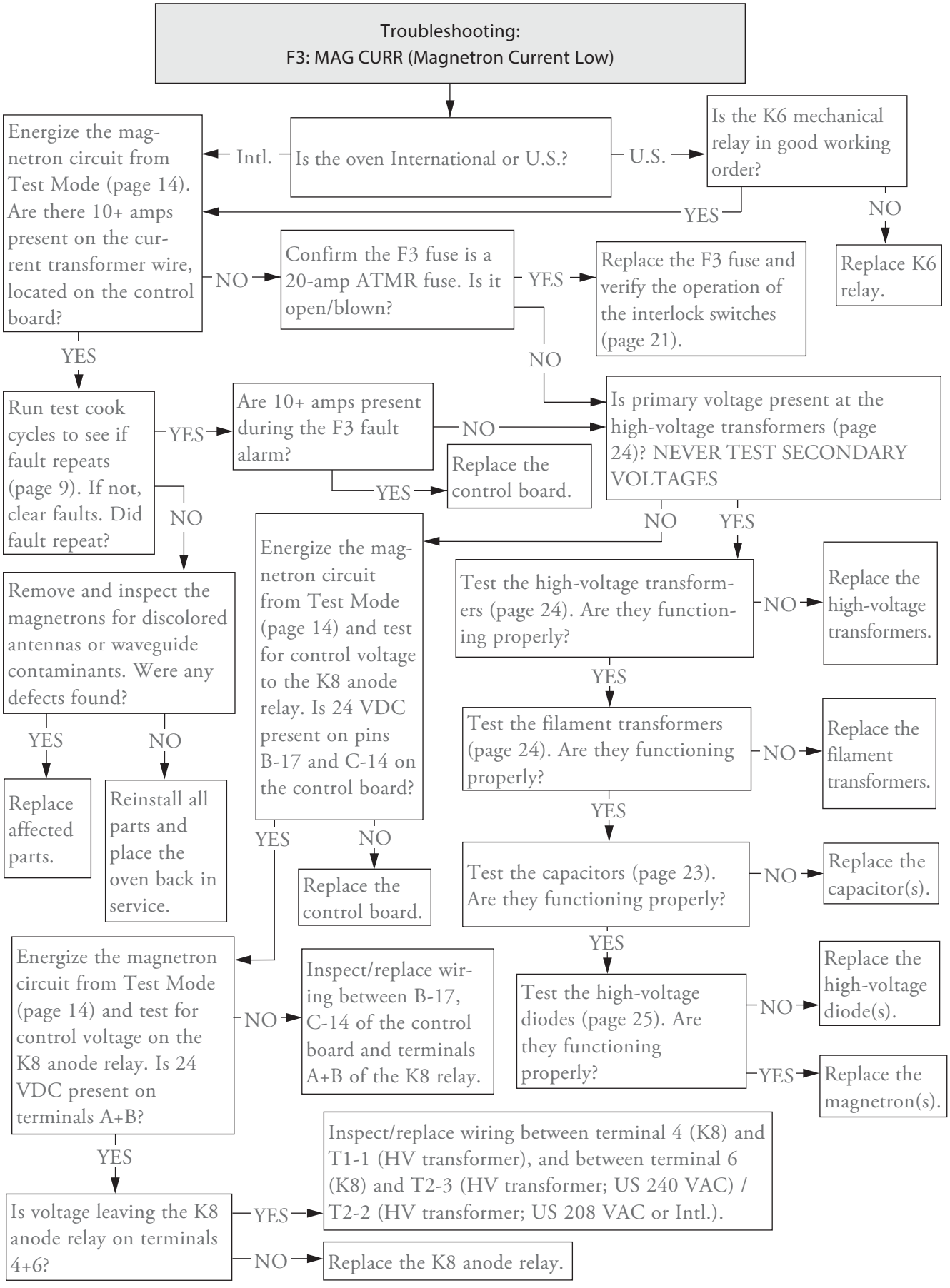
From Test Mode, you can run oven diagnostics and check fault counts. To access Test Mode or turn on Diagnostic mode, see page 14. To locate oven components for testing, adjustment, or replacement, see the Appendix.

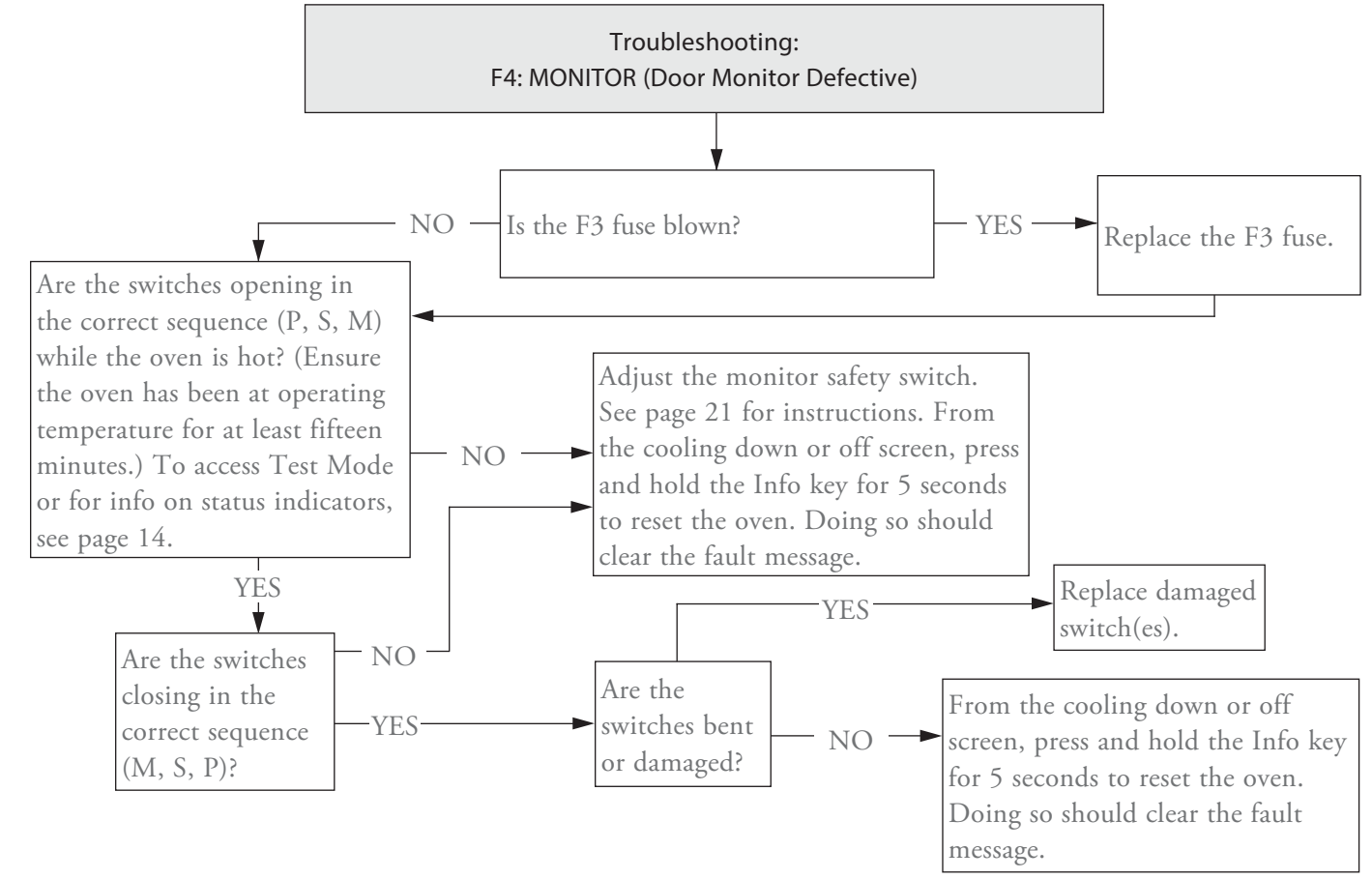

Troubleshooting:
F1: BLOWER (Blower Running Status Bad)
Is each blower motor spinning freely?
YES
NO
Remove obstruction or if necessary, replace blower motor(s).
Do resistance measurements between windings and chassis agree with values on motor windings resistance table (below)? (Be sure to check both the top and bottom blower motors.)
YES
NO
Replace blower motor(s).
Are Status Indicators "B" and "T" backlit in TEST MODE? (page 14)
NO
YES
Check the wire harness and if necessary, replace the control board.
Replace the BMSC.
YES
NO
Test for voltage on the J1 and J2 connector.
1. Ground pin 5 of the J1 connector.
2. While pin 5 is grounded, check the terminals on the control wiring plug for 0-10 VDC across pins 1 and 2 of the J1 connector (see page 45) while incrementing the blower speed in TEST MODE.
3. Repeat steps 1 and 2 for the J2 connector.
Is DC voltage present throughout all speed settings in TEST MODE on both the J1 and J2 connectors?
YES
1. Disconnect control wiring (top blower = J2, bottom = J1 connector).
2. Ground pin 5 of the J1 and J2 connectors (Status OK wire) to chassis to remove the back-light from status indicators "B" and "T"(see page 45).
Were the back-lights removed from the status indicators while pin 5 was grounded?
YES
NO

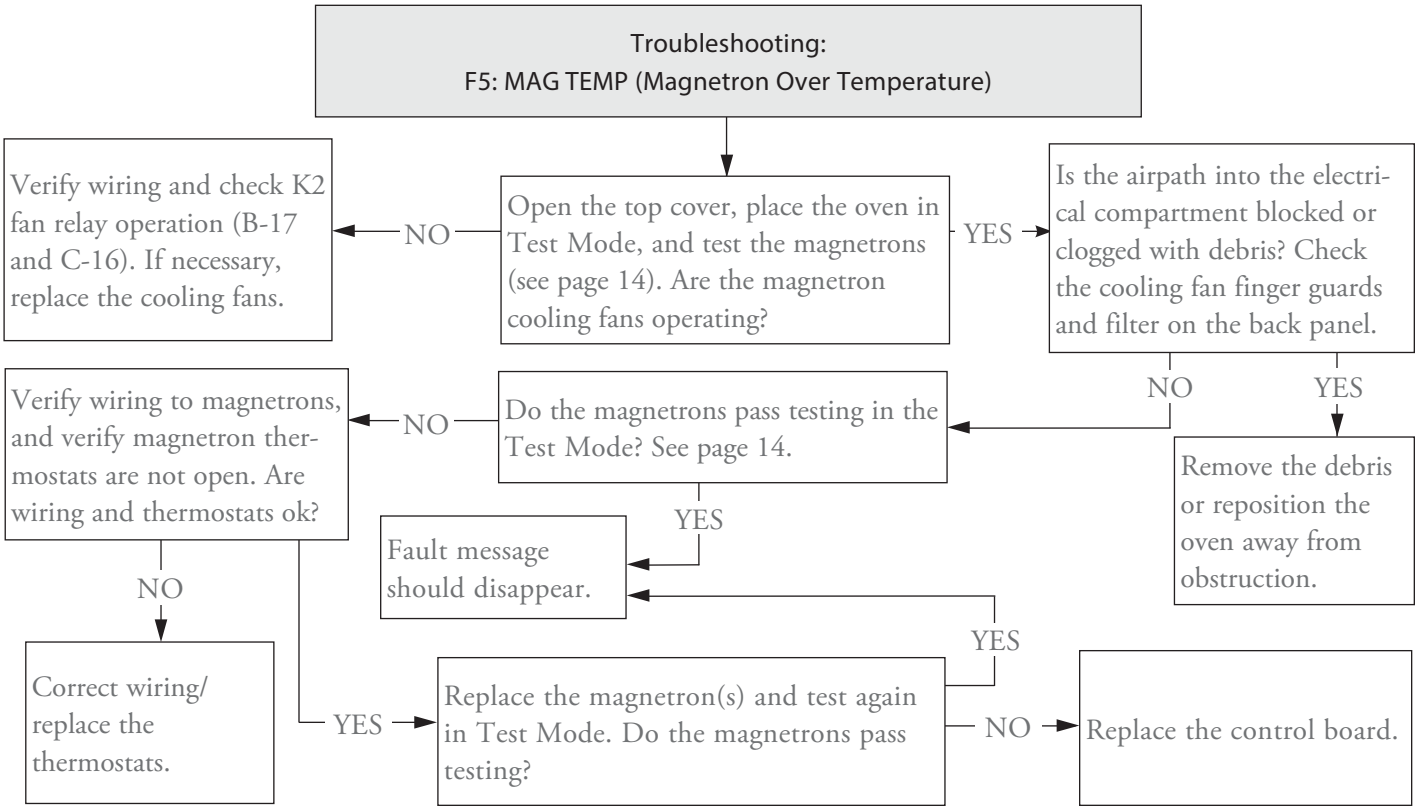
To	From	Description	Expected Resistance
Black	Red	Winding (A-B)	5.9-7.3 Ohms
Black	White	Winding (A-C)	5.9-7.3 Ohms
Red	White	Winding (B-C)	5.9-7.3 Ohms
Black, Red, or White	Green	Windings to Chassis	Open

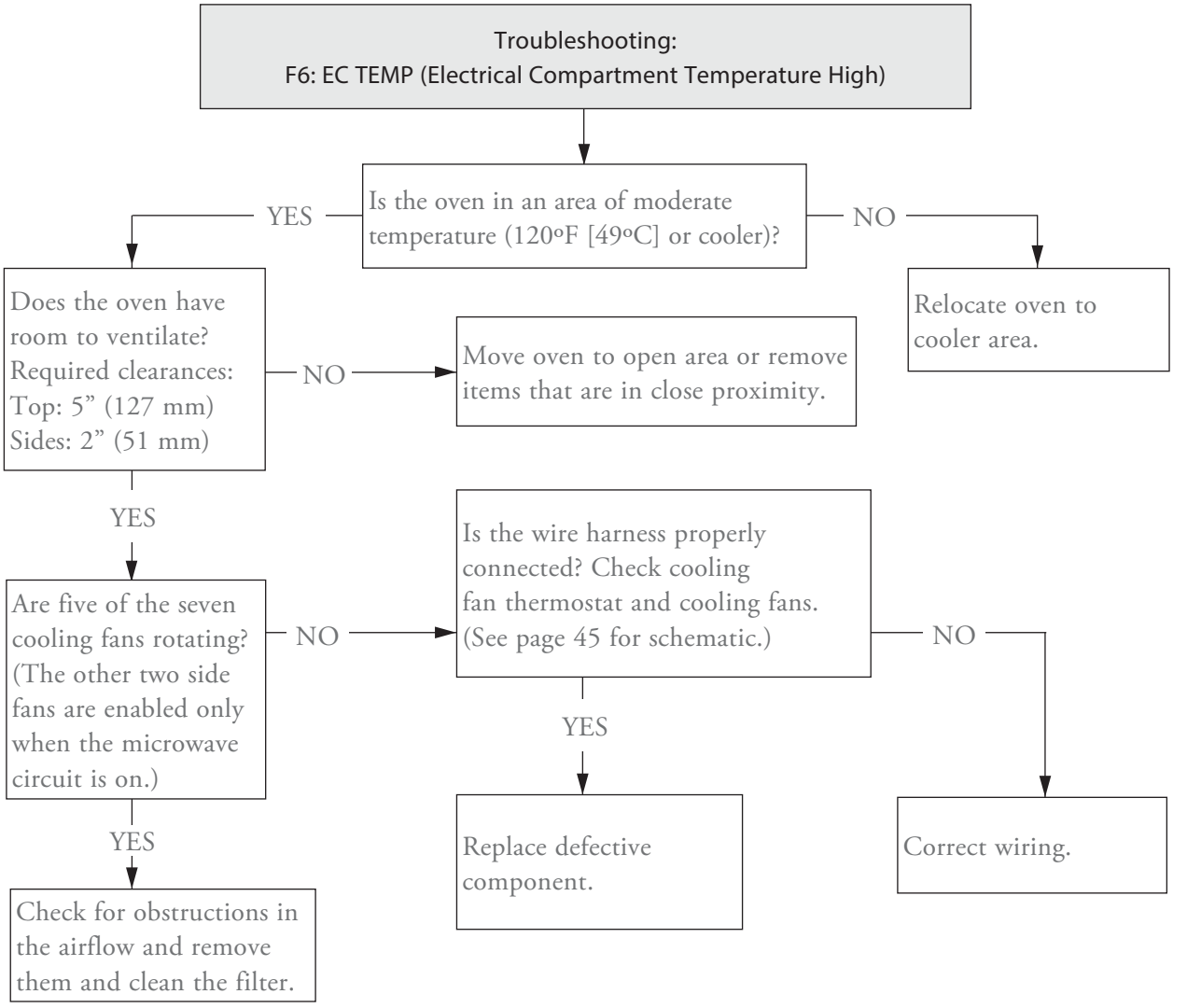
Figure 36: Motor Windings Resistance Table

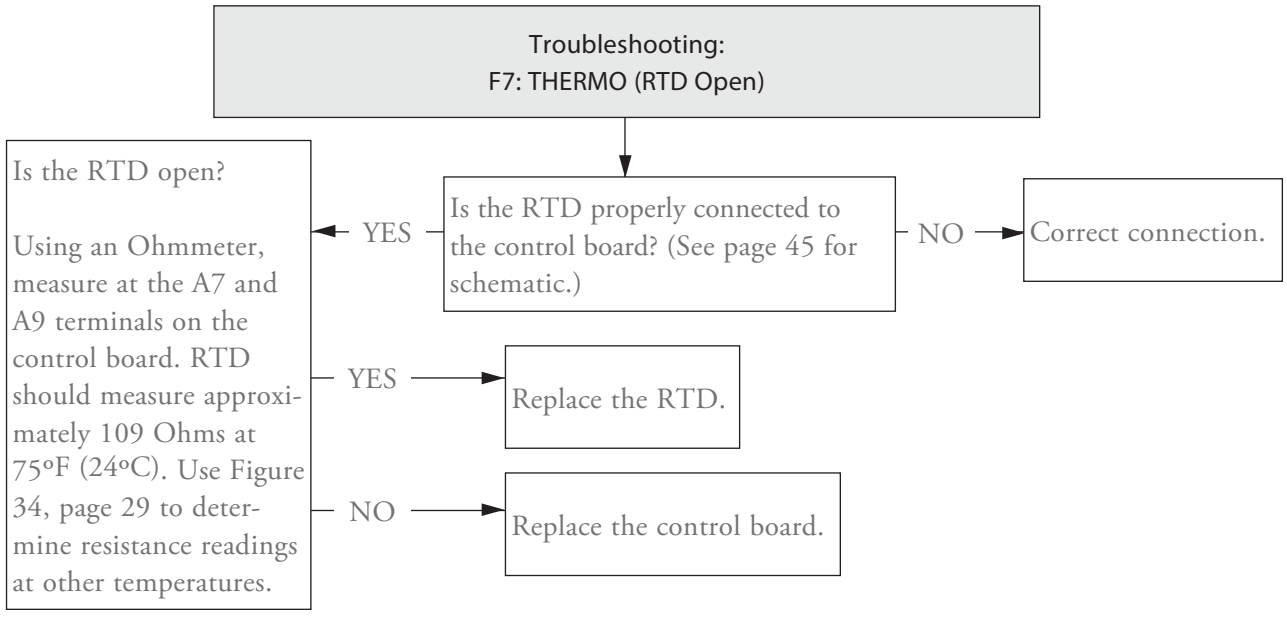

Troubleshooting:
F2: LOW TMP (Cook Temperature Low)
Is the high-limit thermostat tripped?
YES
Reset (Figure 33, page 28) and determine why it tripped – excess grease buildup, etc.
NO
Is either of the heater elements defective? (heaters should have a resistance of 14.4 Ohms)
NO
YES
Replace the defective heater.
Is the solid state relay defective?
NO
Is wiring from the solid state relay to the I/O control board OK? (See page 45 for schematic.)
YES
Replace the solid state relay.
YES
NO
Correct wiring.
Is the RTD functioning properly? (see Figure 34, page 29)
YES
NO
Replace the control board.
Ensure wiring is correct. If necessary, replace RTD.

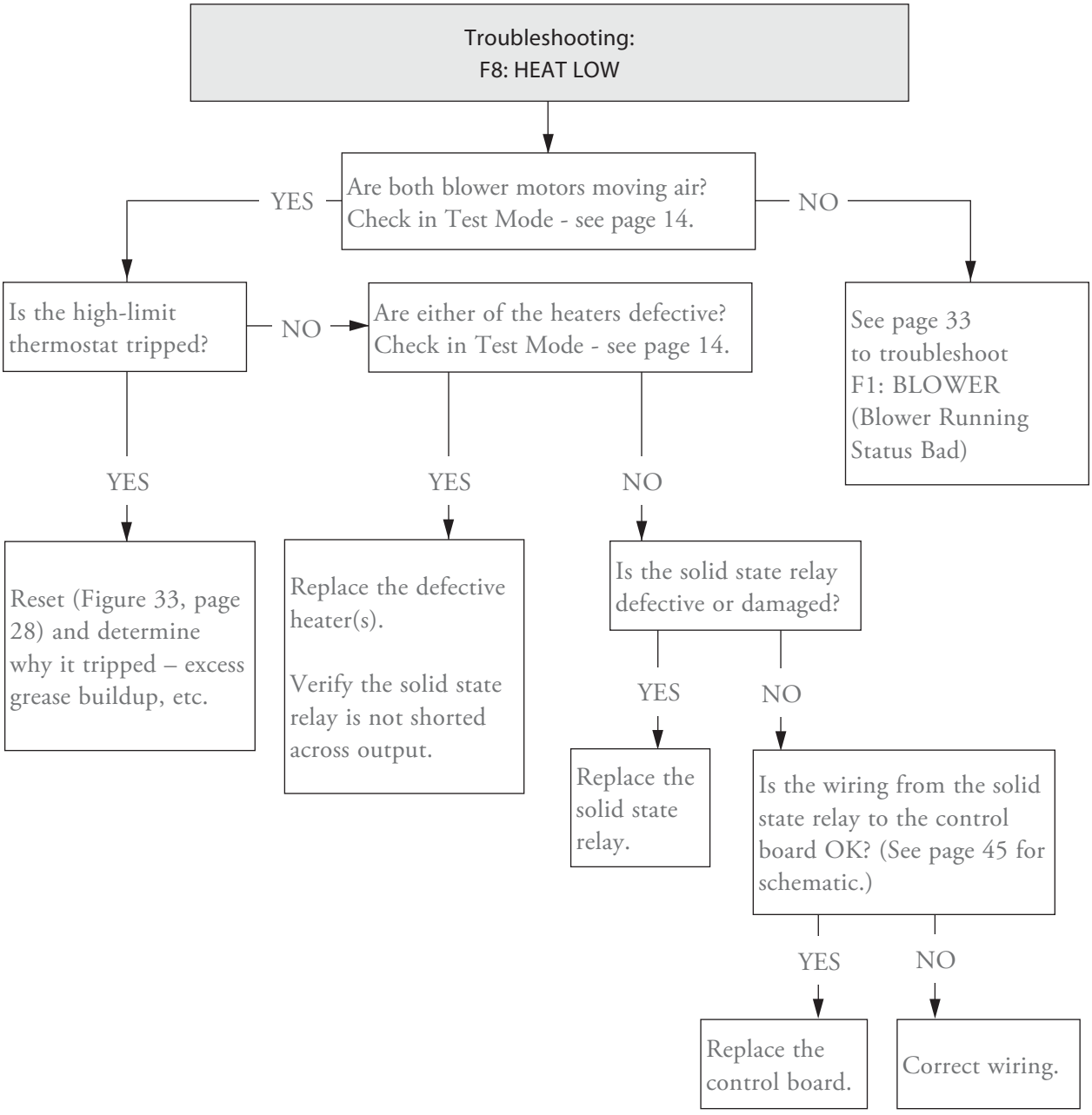

Troubleshooting:
F3: MAG CURR (Magnetron Current Low)
Is the oven International or U.S.?
Intl.
U.S.
Energize the magnetron circuit from Test Mode (page 14). Are there 10+ amps present on the current transformer wire, located on the control board?
Is the K6 mechanical relay in good working order?
YES
NO
Replace K6 relay.
NO
Confirm the F3 fuse is a 20-amp ATMR fuse. Is it open/blown?
YES
Replace the F3 fuse and verify the operation of the interlock switches (page 21).
NO
YES
Run test cook cycles to see if fault repeats (page 9). If not, clear faults. Did fault repeat?
YES
Are 10+ amps present during the F3 fault alarm?
NO
YES
Replace the control board.
Is primary voltage present at the high-voltage transformers (page 24)? NEVER TEST SECONDARY VOLTAGES
NO
YES
NO
Remove and inspect the magnetrons for discolored antennas or waveguide contaminants. Were any defects found?
YES
NO
Replace affected parts.
Reinstall all parts and place the oven back in service.
Energize the magnetron circuit from Test Mode (page 14) and test for control voltage to the K8 anode relay. Is 24 VDC present on pins B-17 and C-14 on the control board?
YES
NO
Replace the control board.
Test the high-voltage transformers (page 24). Are they functioning properly?
NO
Replace the high-voltage transformers.
YES
Test the filament transformers (page 24). Are they functioning properly?
NO
Replace the filament transformers.
YES
Test the capacitors (page 23). Are they functioning properly?
NO
Replace the capacitor(s).
YES
Test the high-voltage diodes (page 25). Are they functioning properly?
NO
Replace the high-voltage diode(s).
YES
Replace the magnetron(s).
Energize the magnetron circuit from Test Mode (page 14) and test for control voltage on the K8 anode relay. Is 24 VDC present on terminals A+B?
NO
Inspect/replace wiring between B-17, C-14 of the control board and terminals A+B of the K8 relay.
YES
Is voltage leaving the K8 anode relay on terminals 4+6?
YES
Inspect/replace wiring between terminal 4 (K8) and T1-1 (HV transformer), and between terminal 6 (K8) and T2-3 (HV transformer; US 240 VAC) / T2-2 (HV transformer; US 208 VAC or Intl.).
NO
Replace the K8 anode relay.

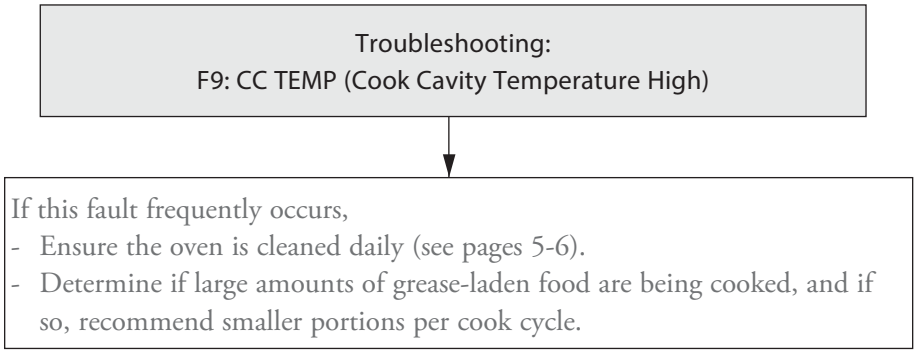

Troubleshooting:
F4: MONITOR (Door Monitor Defective)
Is the F3 fuse blown?
NO
YES
Replace the F3 fuse.
Are the switches opening in the correct sequence (P, S, M) while the oven is hot? (Ensure the oven has been at operating temperature for at least fifteen minutes.) To access Test Mode or for info on status indicators, see page 14.
NO
Adjust the monitor safety switch. See page 21 for instructions. From the cooling down or off screen, press and hold the Info key for 5 seconds to reset the oven. Doing so should clear the fault message.
YES
Are the switches closing in the correct sequence (M, S, P)?
NO
YES
Are the switches bent or damaged?
YES
Replace damaged switch(es).
NO
From the cooling down or off screen, press and hold the Info key for 5 seconds to reset the oven. Doing so should clear the fault message.


Troubleshooting:
F5: MAG TEMP (Magnetron Over Temperature)
Open the top cover, place the oven in Test Mode, and test the magnetrons (see page 14). Are the magnetron cooling fans operating?
NO
Verify wiring and check K2 fan relay operation (B-17 and C-16). If necessary, replace the cooling fans.
YES
Is the airpath into the electrical compartment blocked or clogged with debris? Check the cooling fan finger guards and filter on the back panel.
NO
YES
Remove the debris or reposition the oven away from obstruction.
Do the magnetrons pass testing in the Test Mode? See page 14.
NO
Verify wiring to magnetrons, and verify magnetron thermostats are not open. Are wiring and thermostats ok?
YES
Fault message should disappear.
NO
Correct wiring/ replace the thermostats.
YES
Replace the magnetron(s) and test again in Test Mode. Do the magnetrons pass testing?
YES
NO
Replace the control board.


Troubleshooting:
F6: EC TEMP (Electrical Compartment Temperature High)
Is the oven in an area of moderate temperature (120°F [49°C] or cooler)?
YES
NO
Relocate oven to cooler area.
Does the oven have room to ventilate? Required clearances: Top: 5" (127 mm) Sides: 2" (51 mm)
NO
Move oven to open area or remove items that are in close proximity.
YES
Are five of the seven cooling fans rotating? (The other two side fans are enabled only when the microwave circuit is on.)
NO
Is the wire harness properly connected? Check cooling fan thermostat and cooling fans. (See page 45 for schematic.)
NO
YES
Replace defective component.
Correct wiring.
YES
Check for obstructions in the airflow and remove them and clean the filter.

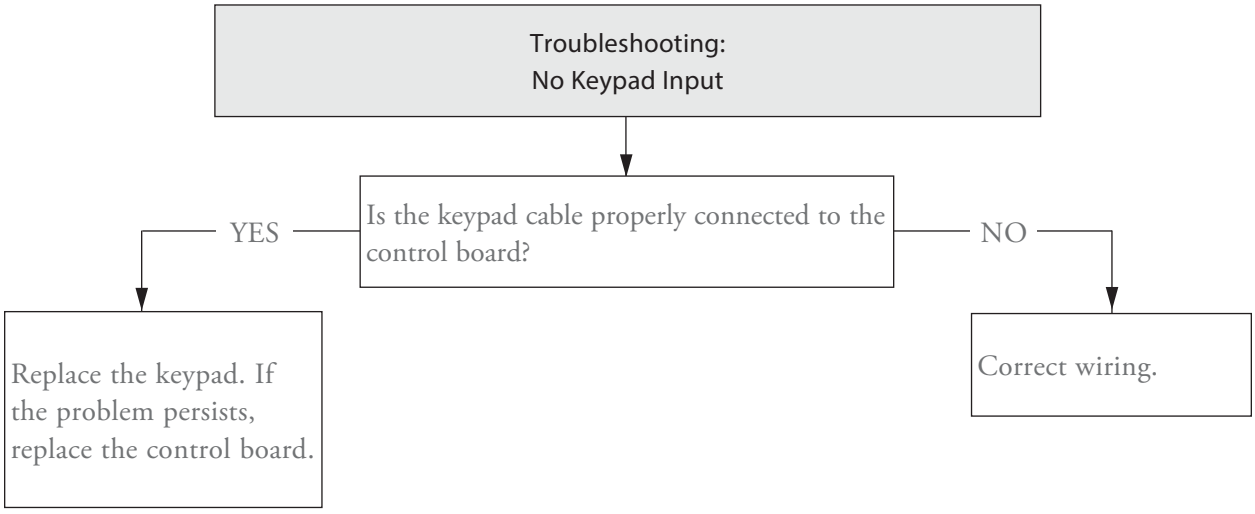

Troubleshooting:
F7: THERMO (RTD Open)
Is the RTD open?
Using an Ohmmeter, measure at the A7 and A9 terminals on the control board. RTD should measure approximately 109 Ohms at 75°F (24°C). Use Figure 34, page 29 to determine resistance readings at other temperatures.
YES
Is the RTD properly connected to the control board? (See page 45 for schematic.)
NO
Correct connection.
YES
Replace the RTD.
NO
Replace the control board.

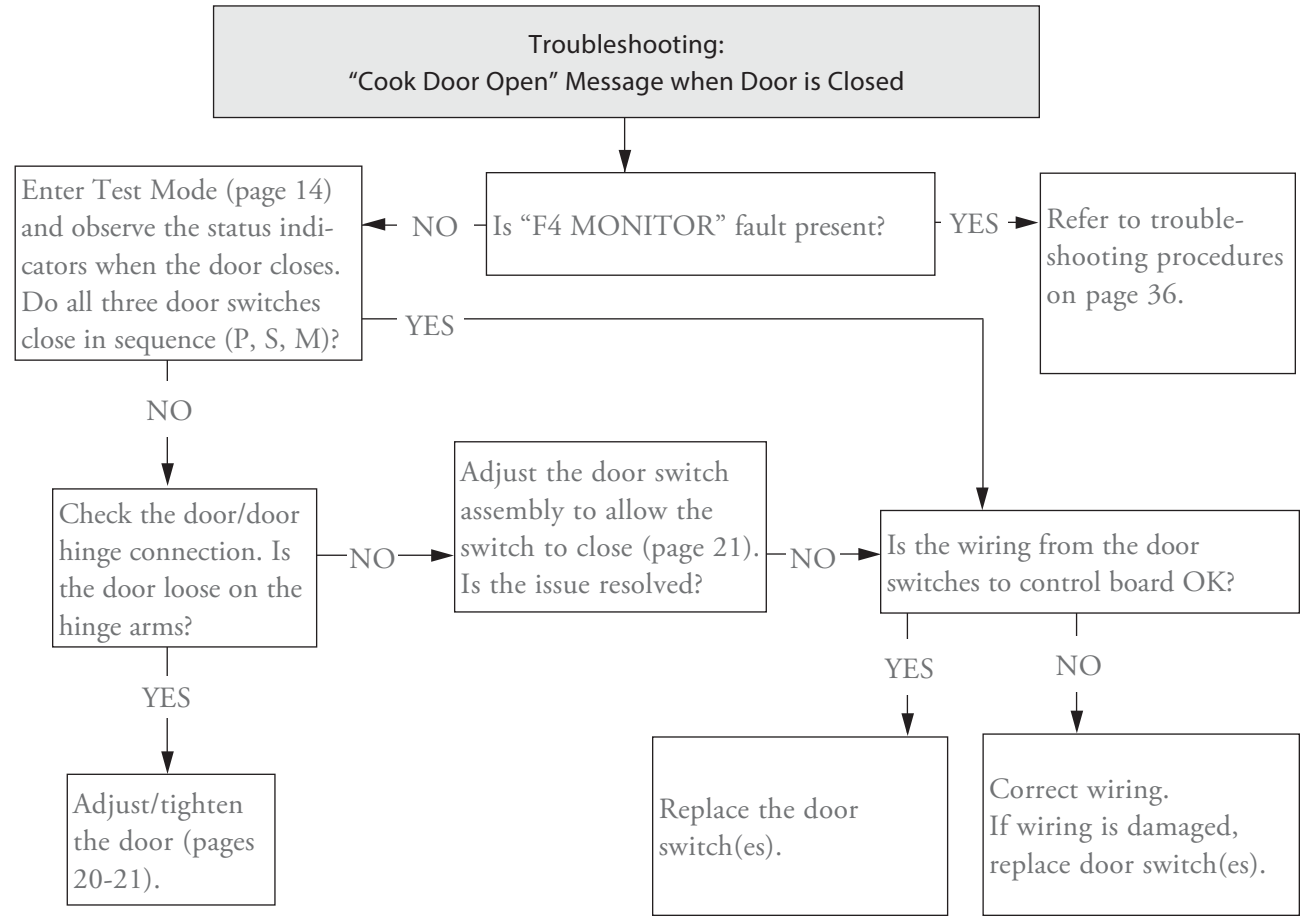

Troubleshooting:
F8: HEAT LOW
Are both blower motors moving air?
Check in Test Mode - see page 14.
YES
NO
Is the high-limit thermostat tripped?
NO
Are either of the heaters defective?
Check in Test Mode - see page 14.
See page 33 to troubleshoot F1: BLOWER (Blower Running Status Bad)
YES
YES
NO
Reset (Figure 33, page 28) and determine why it tripped – excess grease buildup, etc.
Replace the defective heater(s).
Verify the solid state relay is not shorted across output.
Is the solid state relay defective or damaged?
YES
NO
Replace the solid state relay.
Is the wiring from the solid state relay to the control board OK? (See page 45 for schematic.)
YES
NO
Replace the control board.
Correct wiring.

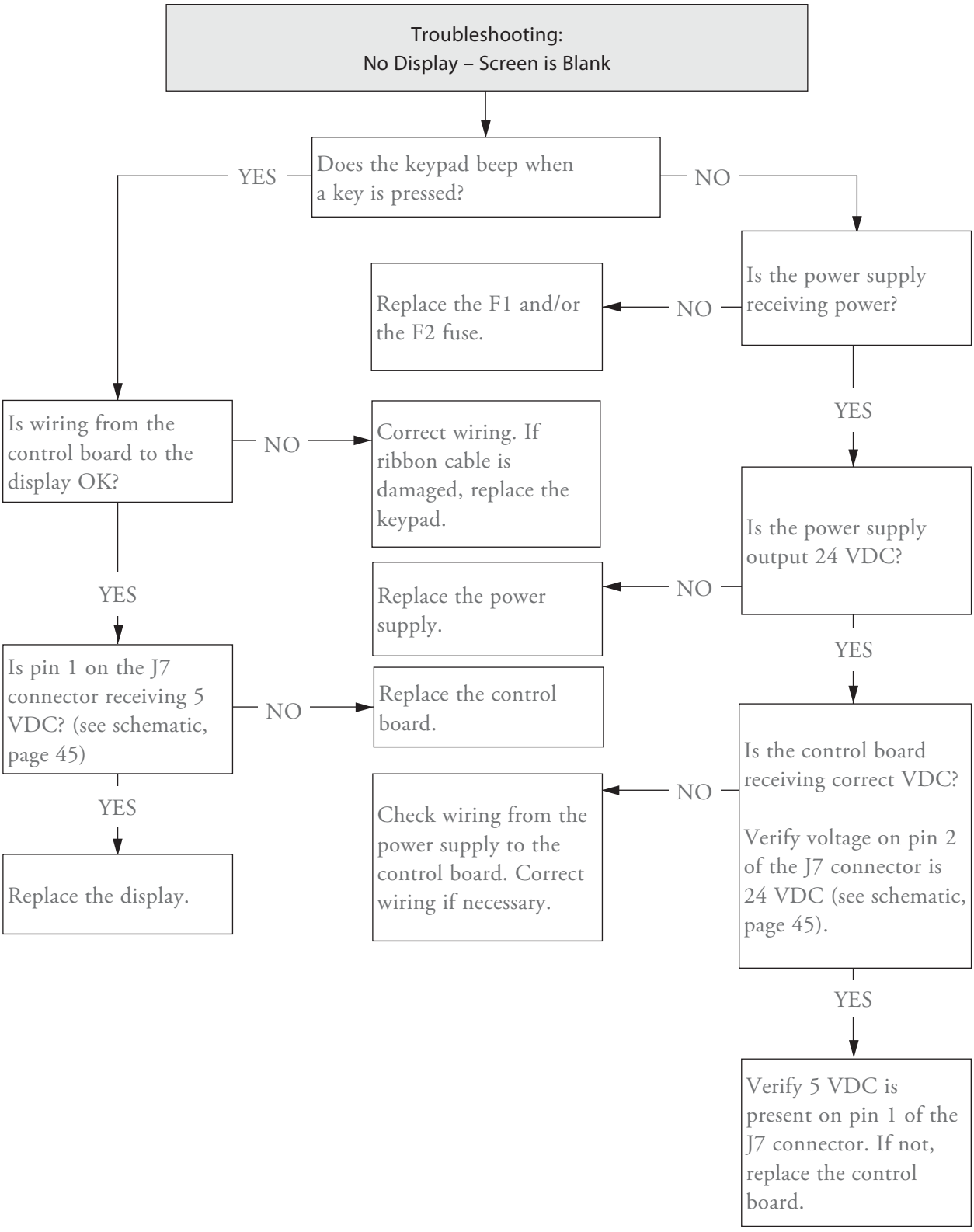

Troubleshooting:
F9: CC TEMP (Cook Cavity Temperature High)
If this fault frequently occurs,
- Ensure the oven is cleaned daily (see pages 5-6).
- Determine if large amounts of grease-laden food are being cooked, and if so, recommend smaller portions per cook cycle.

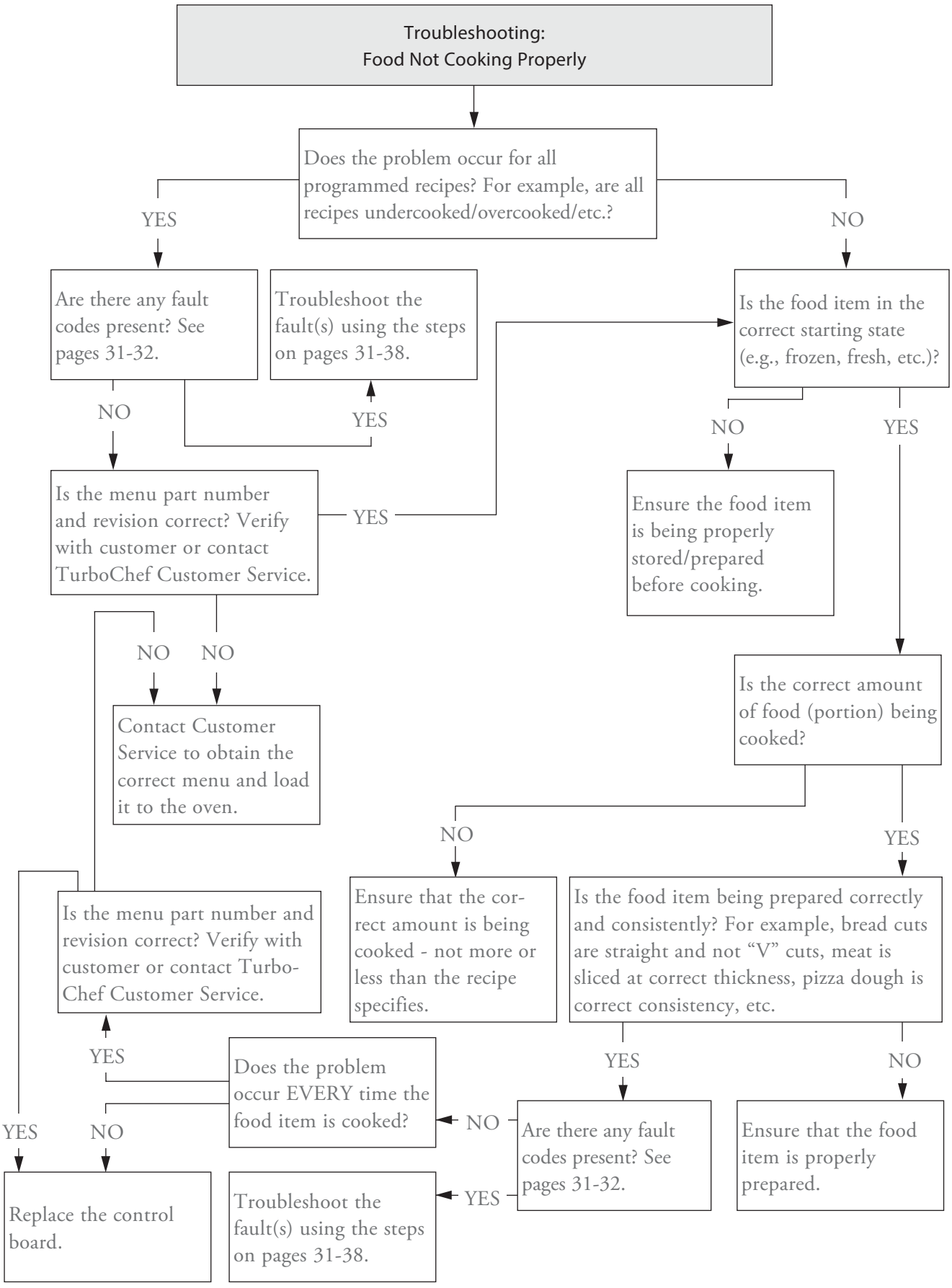
Non-Fault Code Troubleshooting

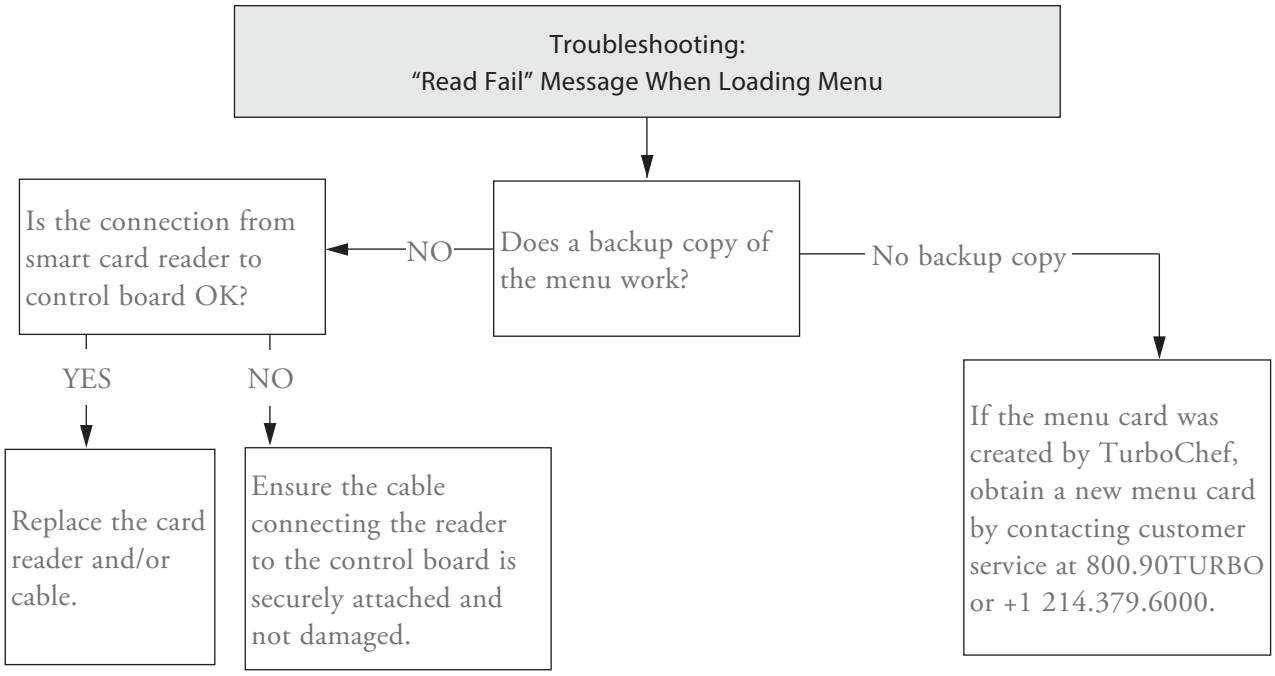
This section provides troubleshooting tips for issues that may occur independently of an oven fault.

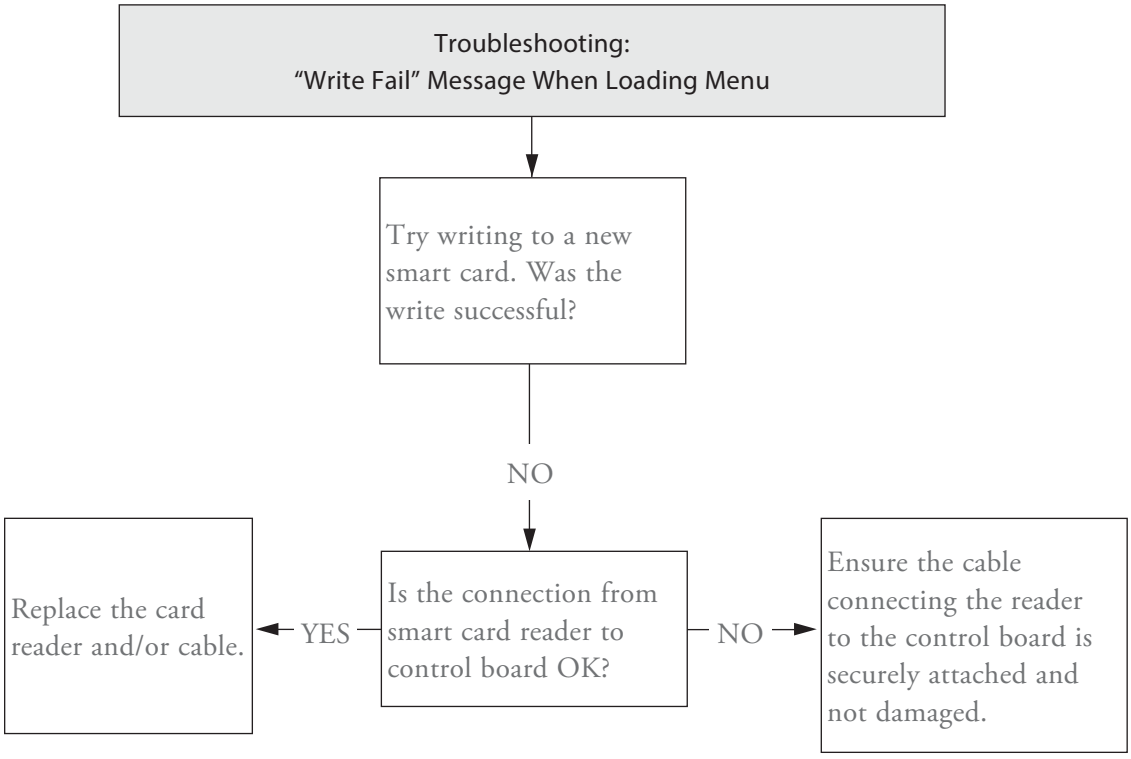

Troubleshooting:
No Keypad Input
Is the keypad cable properly connected to the control board?
YES
NO
Replace the keypad. If the problem persists, replace the control board.
Correct wiring.

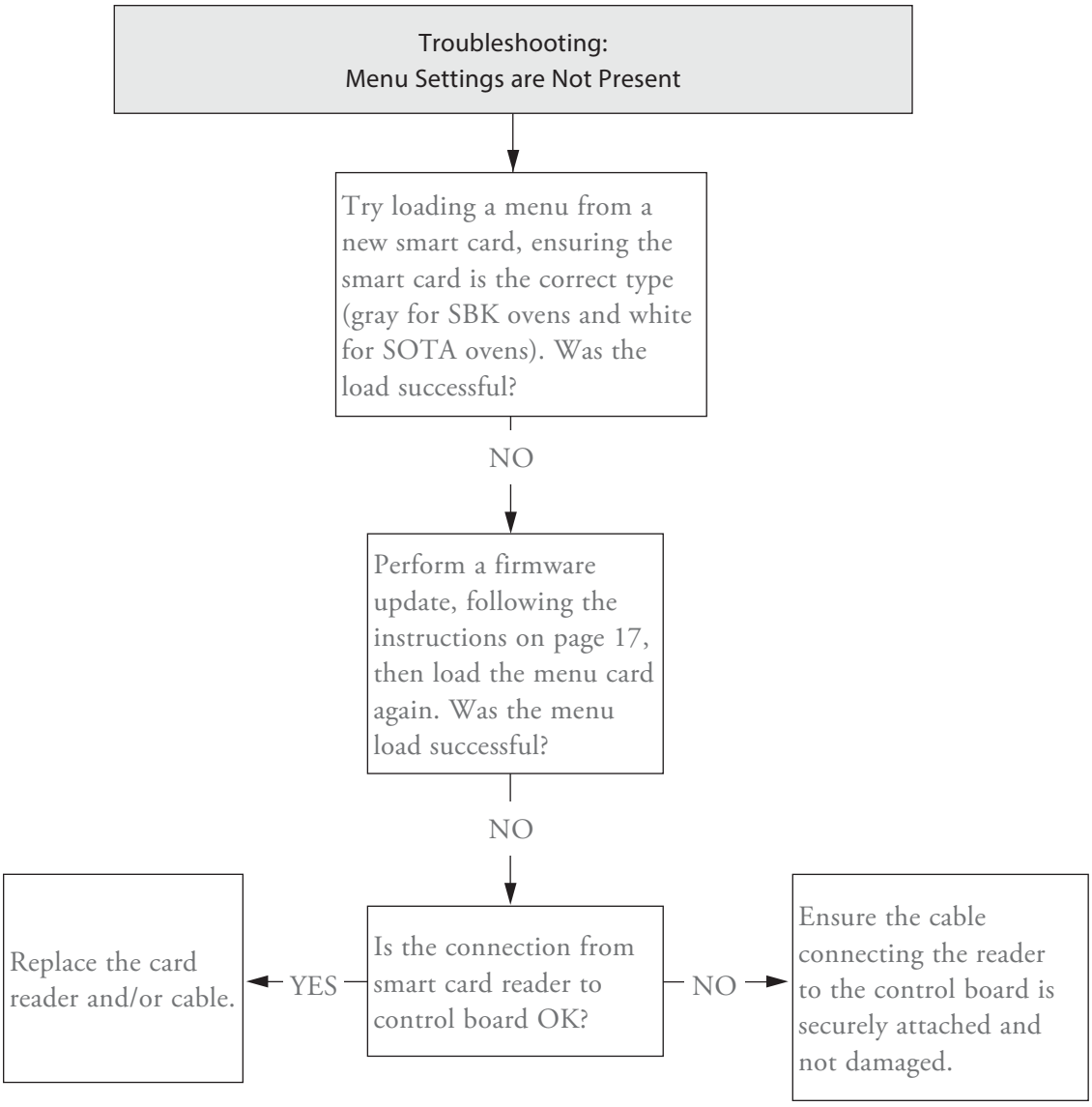

Troubleshooting:
"Cook Door Open" Message when Door is Closed
Is "F4 MONITOR" fault present?
YES
NO
Refer to trouble-shooting procedures on page 36.
Enter Test Mode (page 14) and observe the status indicators when the door closes. Do all three door switches close in sequence (P, S, M)?
YES
NO
Check the door/door hinge connection. Is the door loose on the hinge arms?
NO
YES
Adjust the door switch assembly to allow the switch to close (page 21). Is the issue resolved?
NO
Is the wiring from the door switches to control board OK?
YES
NO
Adjust/tighten the door (pages 20-21).
Replace the door switch(es).
Correct wiring.
If wiring is damaged, replace door switch(es).

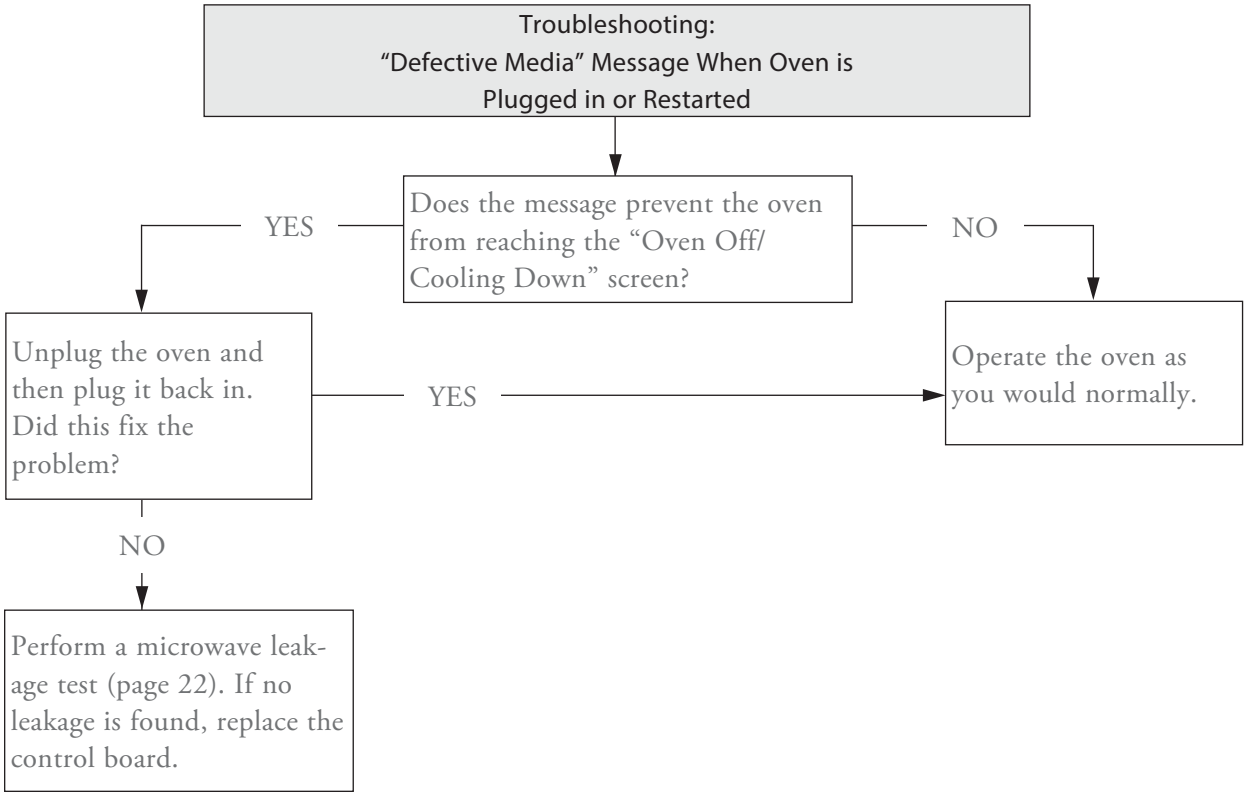

Troubleshooting:
No Display – Screen is Blank
Does the keypad beep when a key is pressed?
YES
NO
Is the power supply receiving power?
NO
Replace the F1 and/or the F2 fuse.
YES
Is the power supply output 24 VDC?
NO
Replace the power supply.
YES
Is the control board receiving correct VDC?
Verify voltage on pin 2 of the J7 connector is 24 VDC (see schematic, page 45).
NO
Check wiring from the power supply to the control board. Correct wiring if necessary.
YES
Verify 5 VDC is present on pin 1 of the J7 connector. If not, replace the control board.
Is wiring from the control board to the display OK?
NO
Correct wiring. If ribbon cable is damaged, replace the keypad.
YES
Is pin 1 on the J7 connector receiving 5 VDC? (see schematic, page 45)
NO
Replace the control board.
YES
Replace the display.


Troubleshooting:
Food Not Cooking Properly
Does the problem occur for all programmed recipes? For example, are all recipes undercooked/overcooked/etc.?
YES
NO
Are there any fault codes present? See pages 31-32.
Troubleshoot the fault(s) using the steps on pages 31-38.
NO
YES
Is the menu part number and revision correct? Verify with customer or contact TurboChef Customer Service.
YES
NO
NO
Contact Customer Service to obtain the correct menu and load it to the oven.
Is the food item in the correct starting state (e.g., frozen, fresh, etc.)?
NO
YES
Ensure the food item is being properly stored/prepared before cooking.
Is the correct amount of food (portion) being cooked?
NO
YES
Ensure that the correct amount is being cooked - not more or less than the recipe specifies.
Is the food item being prepared correctly and consistently? For example, bread cuts are straight and not "V" cuts, meat is sliced at correct thickness, pizza dough is correct consistency, etc.
YES
NO
Ensure that the food item is properly prepared.
Are there any fault codes present? See pages 31-32.
NO
YES
Troubleshoot the fault(s) using the steps on pages 31-38.
Does the problem occur EVERY time the food item is cooked?
YES
NO
Is the menu part number and revision correct? Verify with customer or contact TurboChef Customer Service.
YES
NO
Replace the control board.


Troubleshooting:
"Read Fail" Message When Loading Menu
Does a backup copy of the menu work?
NO
No backup copy
Is the connection from smart card reader to control board OK?
YES
NO
Replace the card reader and/or cable.
Ensure the cable connecting the reader to the control board is securely attached and not damaged.
If the menu card was created by TurboChef, obtain a new menu card by contacting customer service at 800.90TURBO or +1 214.379.6000.


Troubleshooting:
"Write Fail" Message When Loading Menu
Try writing to a new smart card. Was the write successful?
NO
Is the connection from smart card reader to control board OK?
YES
NO
Replace the card reader and/or cable.
Ensure the cable connecting the reader to the control board is securely attached and not damaged.


Troubleshooting:
Menu Settings are Not Present
Try loading a menu from a new smart card, ensuring the smart card is the correct type (gray for SBK ovens and white for SOTA ovens). Was the load successful?
NO
Perform a firmware update, following the instructions on page 17, then load the menu card again. Was the menu load successful?
NO
Is the connection from smart card reader to control board OK?
YES
Replace the card reader and/or cable.
NO
Ensure the cable connecting the reader to the control board is securely attached and not damaged.


Troubleshooting:
"Defective Media" Message When Oven is Plugged in or Restarted
Does the message prevent the oven from reaching the "Oven Off/ Cooling Down" screen?
YES
NO
Unplug the oven and then plug it back in. Did this fix the problem?
YES
Operate the oven as you would normally.
NO
Perform a microwave leakage test (page 22). If no leakage is found, replace the control board.

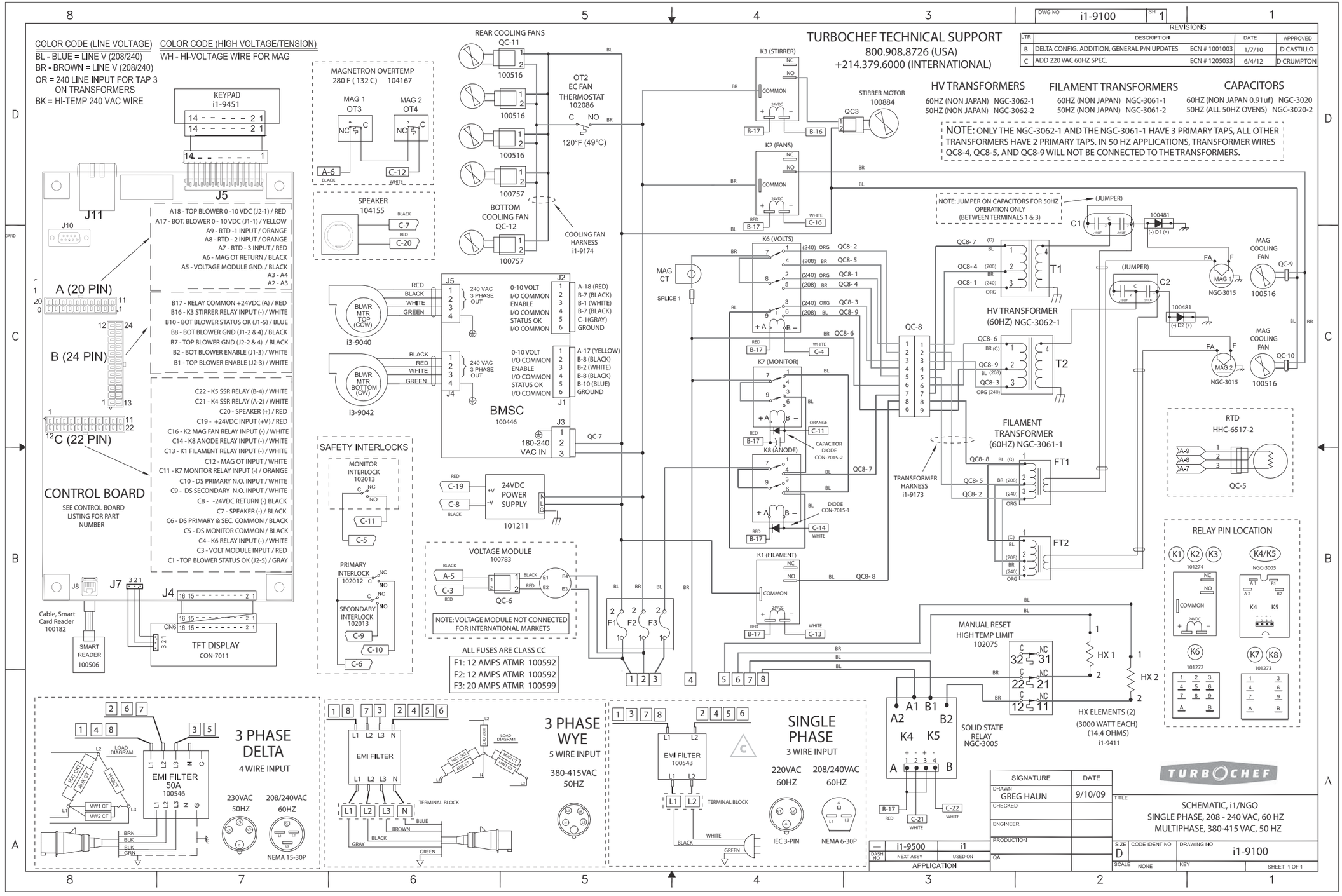


Figure 37: Oven Schematic

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Replacing Oven Components

This appendix provides illustrations for removing serviceable items, as well as the item numbers and descriptions for those items. It also includes the item numbers and descriptions for the fasteners used to secure each component to the oven chassis.

The appendix is divided into the following sections:

- No Cover Removal Required (pages A-2 through A-3)
- Removing Outer Shell Required (pages A-4 through A-10)
- Removing Outer Shell and Back Cover Required (page A-11)
- Removing Outer Shell and Back Cover Required, Single Magnetron Sota (page A-12)

If you have any questions that are not addressed in this manual or appendix, please contact TurboChef Customer Service at 800.90TURBO or +1 214.379.6000.

Replacing Items - No Cover Removal Required (Figures A-1 through A-3)

⚠ CAUTION: Before removing/installing any component, make sure it is disconnected from the wire harness (where applicable).

NOTE: Fasteners listed are required for installing component to oven.

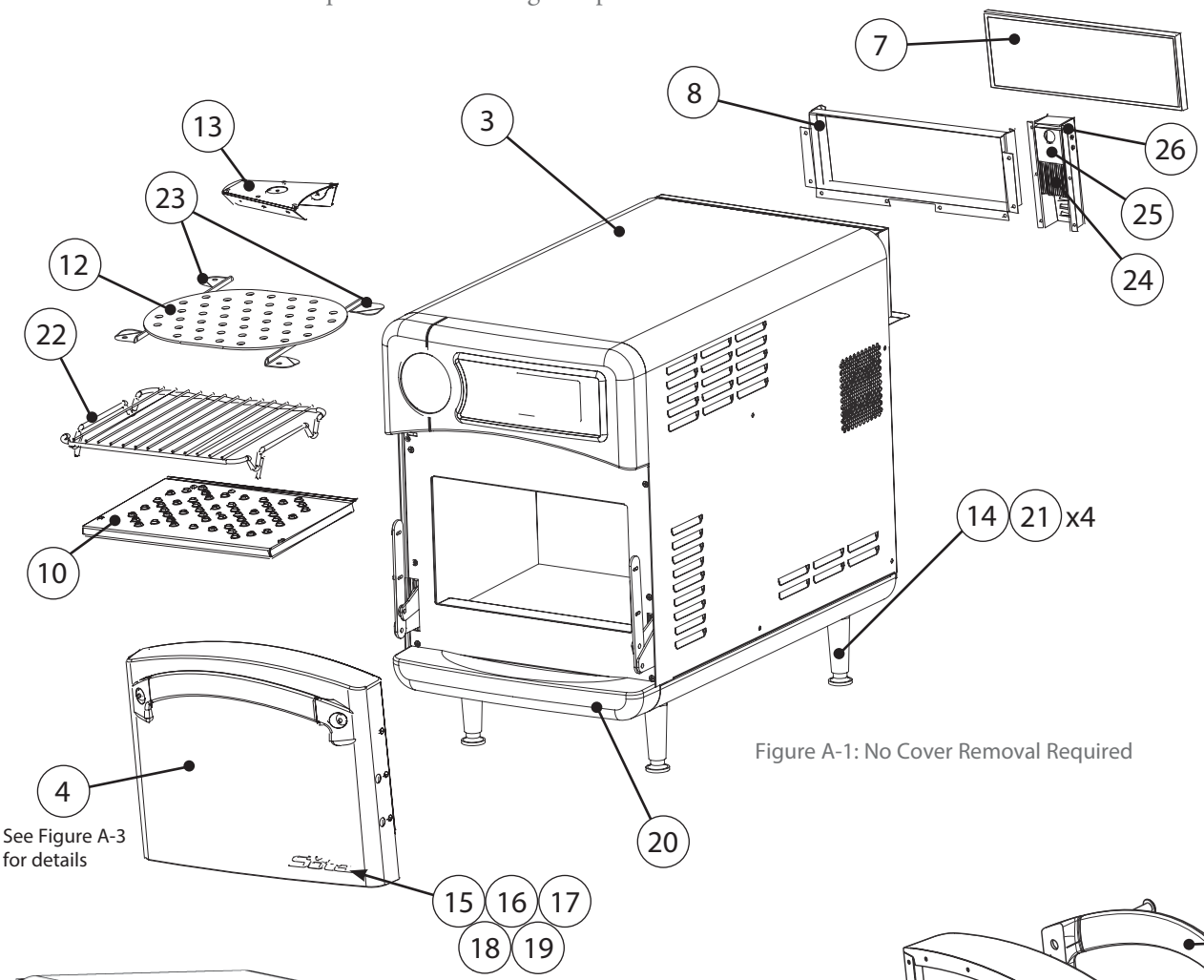

Figure A-1: No Cover Removal Required

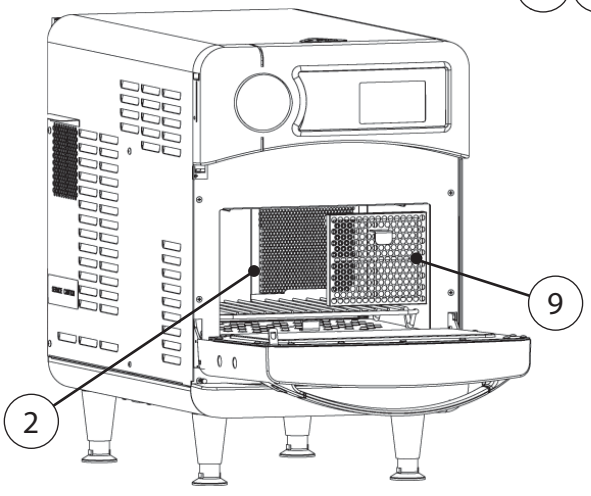

Figure A-2: Stainless Oven Cavity Filter and Bracket

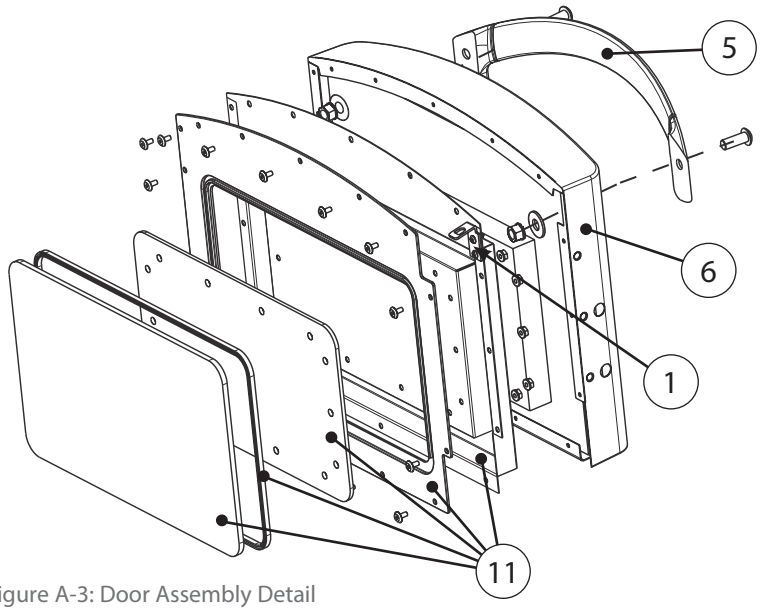

Figure A-3: Door Assembly Detail

Figure Reference #	Item Description	Item Part Number	Fastener Description	Fastener Part Number(s)
1	Actuator, Door Latch	NGC-1076-2	Screw, Torx w/ Post, Sht Mtl, .50 Lg, Blk Ox	102756 (qty 2)
2	Bracket, Removable, Filter-Catalyst	i1-9559 (DARDEN only)		
3	Cover, Outer Shell	i1-9530-1-T004 (SOTA) i1-9530-1-T002 (SBK) i1-9530-2-T008 (STAINLESS)	Screw, #8 x 1/2, Serr Ph Truss Hd, Bk Oxide Screw, #8 x 1/2, Security, Torx Hd, Bk Oxide	101691 (qty 6) 102756 (qty 2)
4	Door, Complete Assembly	i1-3201-1 (SOTA) i1-3201-2 (SBK) i1-3201-5 (STAINLESS)	Included	Included
5	Door Handle	i1-9459 (SOTA/SBK) i1-9537 (STAINLESS)	Screw, Skt Hd Button, 3/8-16 X 1.00 LG, SS Washer, 3/8, Flat, SS Nut, Keps, 3/8-16, Stl	i1-9178 (qty 2) 102210 (qty 2) 102964 (qty 2)
6	Door Skin	i1-9528-1-T004 (SOTA) i1-9528-2-T002 (SBK) i1-9528-3-T008 (STAINLESS)	Screw, #8 x 3/8, Ph Mod Truss Head, Black Oxide, Cres	101372 (qty 15)
7	Filter, Air, Intake	i1-9039	None	None
8	Filter Bracket, Intake	i1-9531-T004 (SOTA) i1-9531-T002 (SBK) i1-9045 (STAINLESS)	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 8)
9	Filter, Cavity	i1-9569 (SOTA) i1-9557 (STAINLESS)		
10	Jetplate (Bottom), with Diverter	i1-9159-1 (SOTA/SBK) i1-9159-2 (STAINLESS)	None	None
11	Kit, Door Shunt Plate	i1-3210 (SOTA/SBK) i1-3210-2 (STAINLESS)	Included	Included
12	Kit, Jetplate (Top)	i1-3219	None	None
13	Kit, MW Stirrer	i1-3212	Included	Included
14	Leg (x4)	HHB-3205 (SOTA) 100781 (SBK)	None	None
15	Letter, S (SOTA only)	i1-9052 (SOTA only)	Nut, Push, .094"	104307 (qty 3)
16	Letter, O (SOTA only)	i1-9053 (SOTA only)	Nut, Push, .094"	104307 (qty 2)
17	Letter, T (SOTA only)	i1-9054 (SOTA only)	Nut, Push, .094"	104307 (qty 2)
18	Letter, A (SOTA only)	i1-9055 (SOTA only)	Nut, Push, .094"	104307 (qty 2)
19	Letter, Caret (SOTA only)	i1-9056 (SOTA only)	Nut, Push, .062"	104308 (qty 1)
20	Lower Front Panel	i1-9529-T004 (SOTA) i1-9529-T002 (SBK) i1-9573 (STAINLESS)	Ball Stud, Male, #6-32x.447" Lg (SOTA/SBK) Washer, Split Lock (SOTA/SBK) Ball Stud (DARDEN)	100027 (qty 3) 102380 (qty 3) HHB-8189 (qty 2)
21	Pad, Abrasive, Non-Slip (x4)	NGC-1187	None	None
22	Rack, Standard	i1-9398	None	None
23	Rail, Support, Top Jetplate (x2)	i1-9179-2 (also included with i1-3219 kit)	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 2 per)
24	Vent Catalyst Foil Pack	RWD-9191	None	None
25	Vent Tube Cover	NGC-1392	Screw, #6 x 1/2, PPHD, Drill Point, SS	101687 (qty 2)
26	Weldment, Heat Channel, Vent Tube	NGC-1397	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 6)
Optional	Stone, Baking, Fibrament	i1-9533	None	None
Optional	Kit, Panini Grill and Rack	i1-3221	None	None

Replacing Items - Removing Outer Shell Required (Figures A-4 through A-16)

⚠ DANGER: Before replacing any oven component, ensure the oven is removed from any power source. Replacing a component while the oven is plugged in can result in serious injury or death

⚠ CAUTION: Be careful to not tear the insulation when servicing components. Always reinstall the insulation properly before reinstalling the outer shell.

NOTE: Fasteners listed are required for installing component to oven.

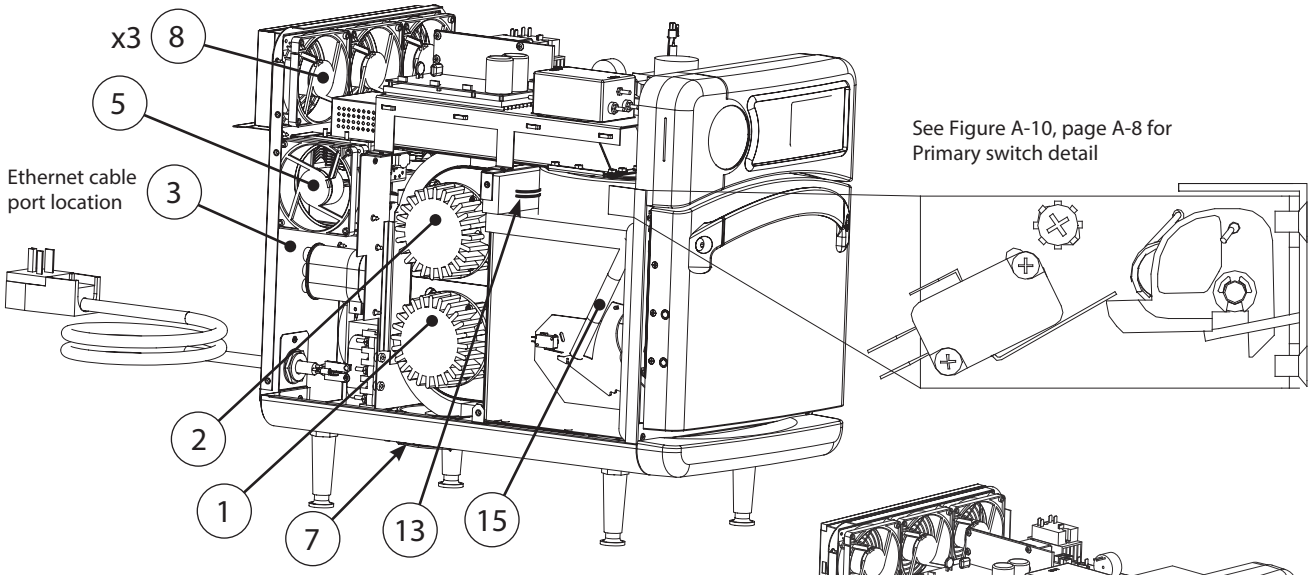

Figure A-4: Outer Shell Removed - Left Side

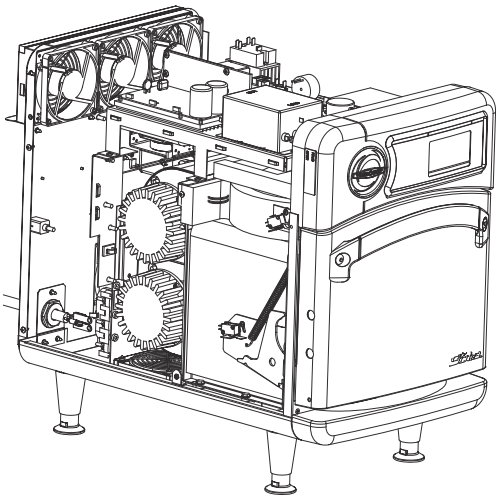

Figure A-5: Outer Shell Removed - Left Side Single Magnetron Sota

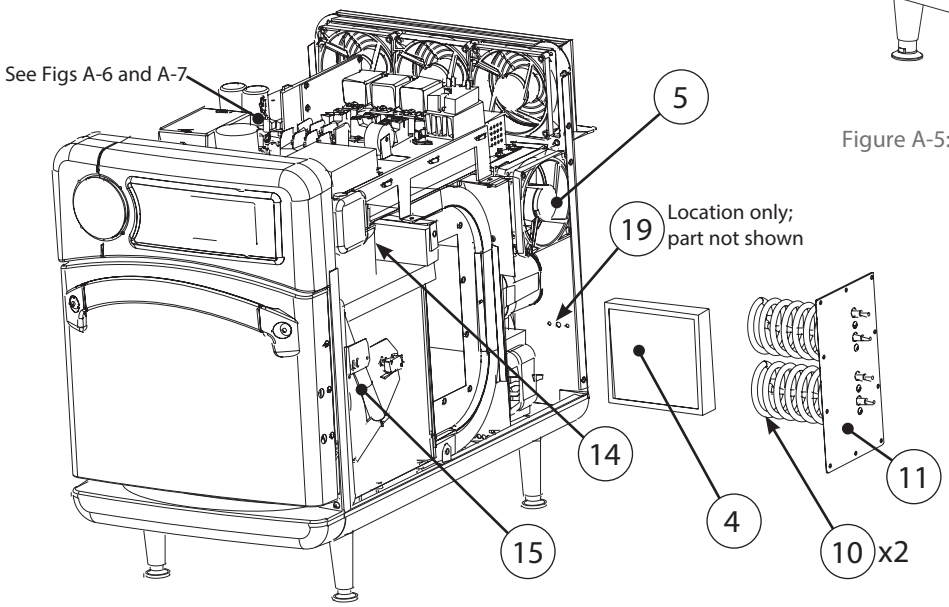

Figure A-6: Outer Shell Removed - Right Side

Figure Reference #	Item Description	Item Part Number	Fastener Description	Fastener Part Number(s)
1	Blower Motor, Bottom	i3-3209-2 (SOTA/SBK) i3-3209-4 (STAINLESS)	Nut, 1/4 - 20, Serr Hex Flange, Plated	100906 (qty 4)
2	Blower Motor, Top	i3-3209-1 (SOTA/SBK) i3-3209-3 (STAINLESS)	Nut, 1/4 - 20, Serr Hex Flange, Plated	100906 (qty 4)
3	Cable, Ethernet, Ext, 4' Cat-6	100164	Screw, #4-40 x .25, PPH Sems Int Tooth, SS	101520 (qty 2)
4	Catalytic Converter	i1-9066	None	None
5	Cooling Fan, Sides: - NGO/Sota x2 - Single Magnetron Sota x1	100516	Screw, #10 x 1/2, PPHD, Type F	101694 (qty 4 each)
6	Cooling Fan, Lower-Back Cover (not shown)	100757	Screw, #10-32 x 1/2, Hex Wshr Hd, Type 23	101408 (qty 4)
7	Cooling Fan, Underneath Oven	100757	Screw, #10 x 1/2, PPHD, Type F	101694 (qty 4)
8	Cooling Fan, Upper-Back Cover (x3)	100516	Screw, #10-32 x 1/2, Hex Wshr Hd, Type 23	101408 (qty 4)
9	Cooling Fan Finger Guard (x6) (not shown)	100087	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 2)
10	Heater (x2)	i1-9411	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 2 each)
11	Heater Plate	i3-9565	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 10)
12	Kit, Stirrer Shaft	i1-3214	Included	Included
13	RTD, Cook Cavity, 3"	HHC-6517-2	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 2)
14	Speaker	CON-3003	Screw, #8-32 x 3/8, PPHD, Int Sems, SS	102921
15	Spring, Door, Replacement Kit	i1-3213	Included	Included
16	Stirrer Coupling Hub	104132	Set Screw (Provided)	N/A
17	Stirrer Motor	100884	Screw, M4 x 0.7 x 8, PPHD, Int Tooth, SS	101672 (qty 2)
18	Stirrer Motor Bracket	i1-9075	Nut, #10-32, Serr Hex Flange, Zinc	100913 (qty 3)
19	Thermostat, High-Limit, 300°C	102075	Screw, M4 x 0.7 x 8, PPHD, Int Tooth, SS	101672 (qty 2)

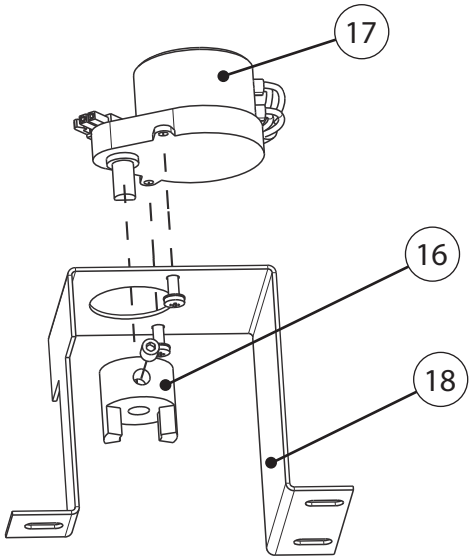

Figure A-7: Stirrer Motor Detail

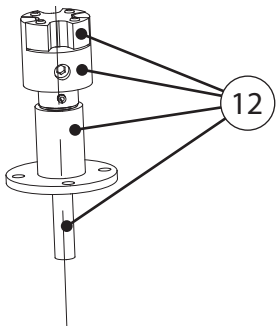

Figure A-8: Stirrer Shaft Detail

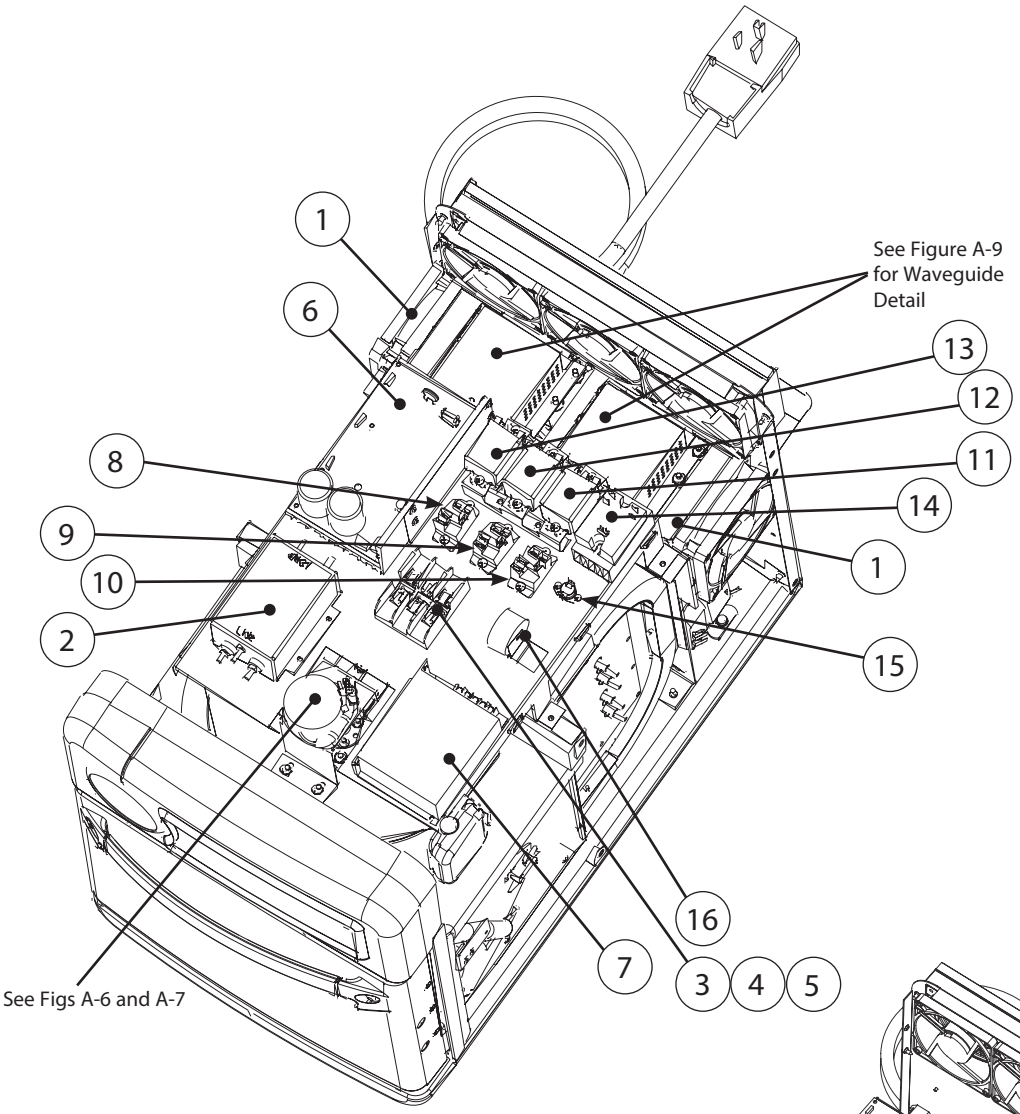

Figure A-9: Outer Shell Removed (Top View) and Stirrer Motor Detail

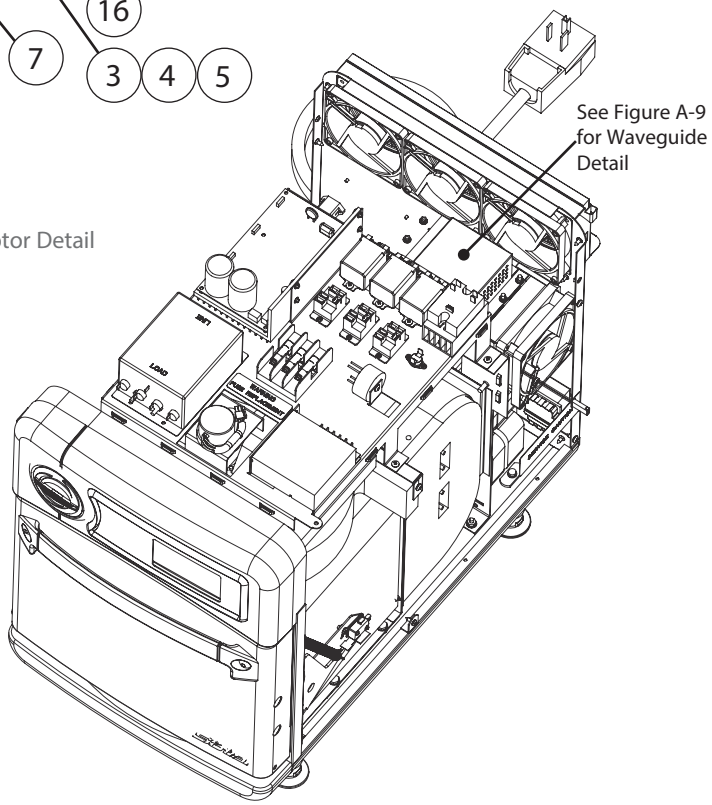

Figure A-10: Outer Shell Removed (Top View) and Stirrer Motor Detail
Single Magnetron Sota

Figure Reference #	Item Description	Item Part Number	Fastener Description	Fastener Part Number(s)
1	Bracket, Mounting, Mag Fan: - NGO/Sota x2 - Single Magnetron Sota x1	i1-9478	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 2 each)
2	EMI Filter	100543 (1 Ph) 100547 (3 Ph)	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 4)
3	Fuses, F1 and F2, 12-amp	100592	None	None
4	Fuse, F3, 20-amp	100599	None	None
5	Fuse Block	103566	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 2)
6	Motor Controller	CON-7039	Screw, #8 x 3/8, Ph Mod Truss Hd, Cres	101682 (qty 4)
7	Power Supply Kit	NGC-3069	Included with kit	Included with kit
8	Relay, K1, Filament	101274	Screw, #6 x 1/2, PPHD, Int Sems, SS	101687 (qty 2)
9	Relay, K2, Mag Fan	101274	Screw, #6 x 1/2, PPHD, Int Sems, SS	101687 (qty 2)
10	Relay, K3, Stirrer	101274	Screw, #6 x 1/2, PPHD, Int Sems, SS	101687 (qty 2)
11	Relay, K6, Voltage	101272	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 2)
12	Relay, K7, Monitor	101273	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 2)
13	Relay, K8, Anode	101273	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 2)
14	Relay, Solid State, K4/K5, Heaters	101286	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 2)
15	Thermostat, Cooling Fans, 120°F	102086	Screw, #6 x 3/8, PPHD, Drill Point, Zinc	101684 (qty 2)
16	Voltage Sensor	100783	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 1)
17	Waveguide Kit: - NGO/Sota x2 - Single Magnetron Sota x1	i1-3202	Included	Included
18	Waveguide Cover: - NGO/Sota x2 - Single Magnetron Sota x1	i1-9462	None	None
19	Waveguide Gasket: - NGO/Sota x2 - Single Magnetron Sota x1	i1-9331	Nut, #10-32, Serr Hex Flange, Zinc	100913 (qty 9 each)
20	Waveguide Seal: - NGO/Sota x2 - Single Magnetron Sota x1	i1-9486	None	None

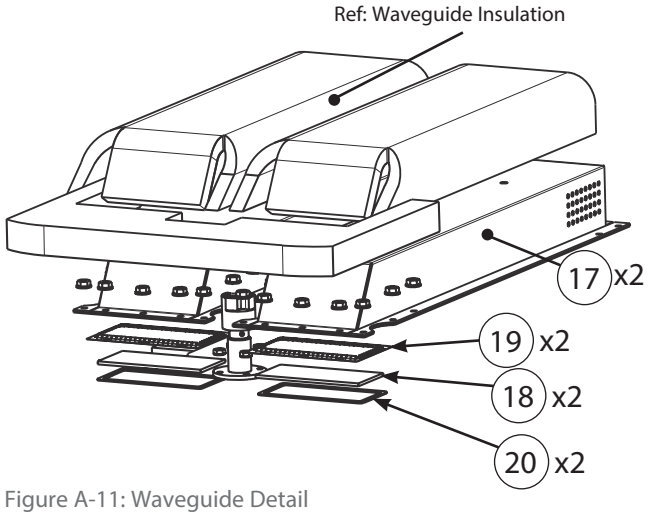

Figure A-11: Waveguide Detail

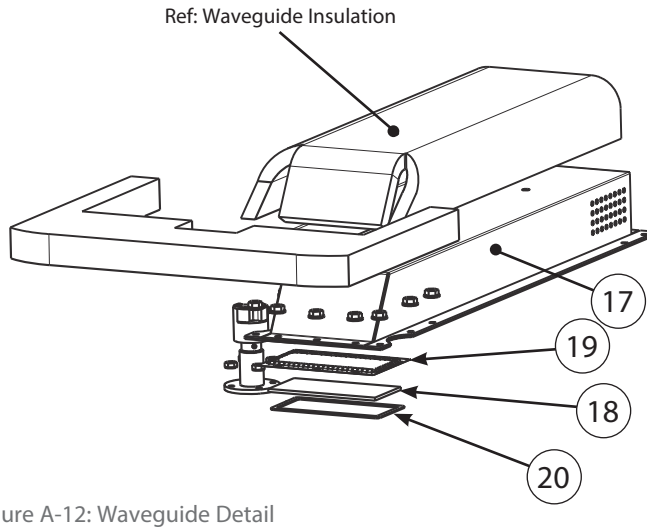

Figure A-12: Waveguide Detail
Single Magnetron Sota

Figure Reference #	Item Description	Item Part Number	Fastener Description	Fastener Part Number(s)
1	Kit, Door Switch, Primary*	NGC-3033*	Included	Included
2	Hinge, LHS	i1-3220-1	Screw, #8-32 x 5/8, PFH, 100 Deg, SS	102811 (qty 3)
3	Hinge, RHS	i1-3220-2	Screw, #8-32 x 5/8, PFH, 100 Deg, SS	102811 (qty 3)
4	Interlock Switch (Monitor)	102013	Screw, #4-40 x 3/4, Sems, PPHD, SS	102904 (qty 2)
5	Interlock Switch (Secondary)	102013	Screw, #4-40 x 3/4, Sems, PPHD, SS	102904 (qty 2)
6	Kit, Switch Offset, Shim and Replacement Tab (x2)	i1-3207	Screw, #4-40 x 3/4, Sems, PPHD, SS	102904 (qty 2)
7	Plate, Door Switch, S/M (x2)	NGC-1126	Screw, #4-40 x 3/4, Sems, PPHD, SS Screw, #8-32 x 3/8, PPHD, Int Sems, SS	102904 (qty 2 each) 102921 (qty 1 each)
8	Stop, Paddle, Door Switch, S/M (x2)	NGC-1324	Screw, #4-40 x 3/4, Sems, PPHD, SS	102904 (qty 2 each)

* When replacing the primary switch:

a.) Discard one of the switches supplied with kit NGC-3033

b.) Use the shorter screws (see Figure below)

c.) Follow all instructions in the provided field service bulletins FSB-10057 and FSB-10094

d.) Discard FSB-10055

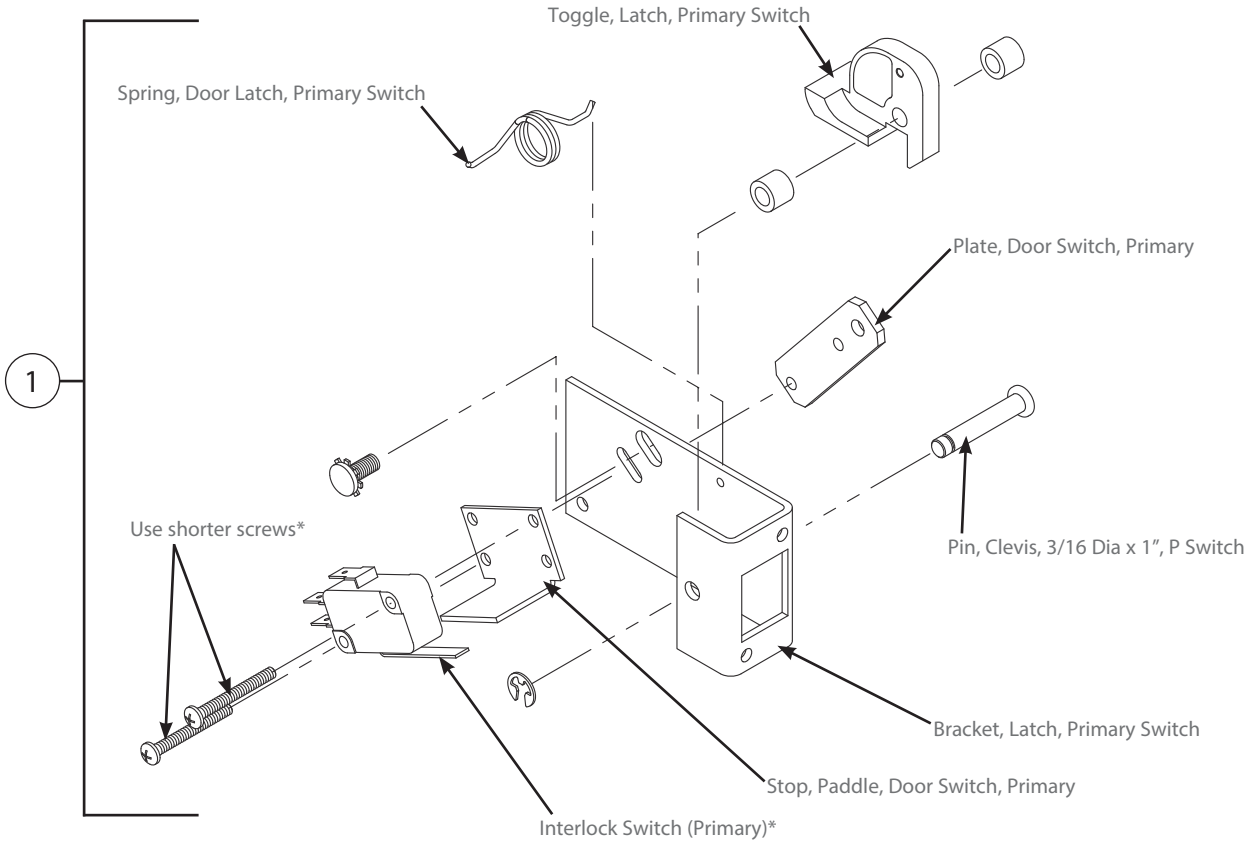
Toggle, Latch, Primary Switch
Spring, Door Latch, Primary Switch
Plate, Door Switch, Primary
1
Use shorter screws*
Pin, Clevis, 3/16 Dia x 1", P Switch
Bracket, Latch, Primary Switch
Stop, Paddle, Door Switch, Primary
Interlock Switch (Primary)*

Figure A-13: Primary Switch Detail

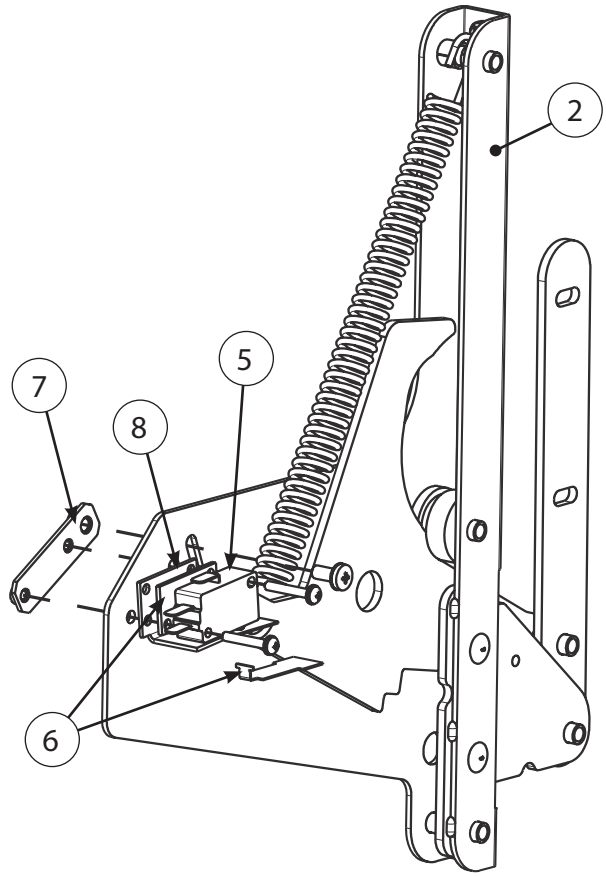

Figure A-14: Left Hinge / Secondary Switch Detail

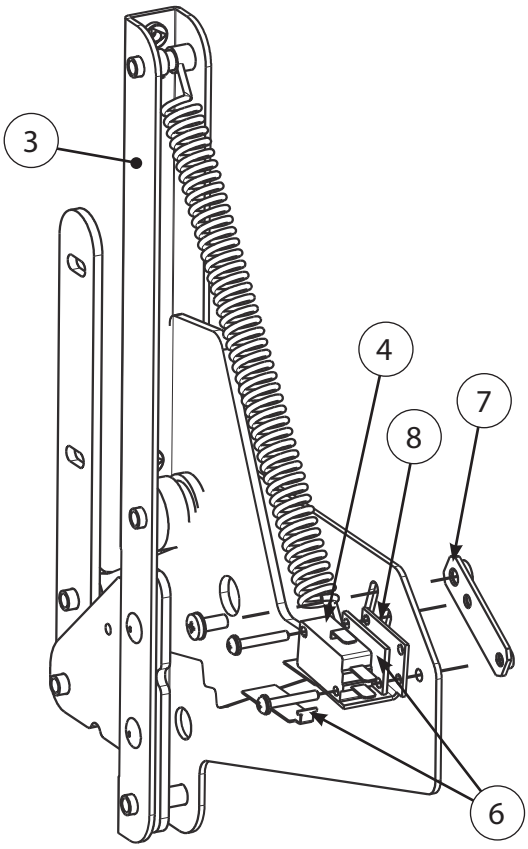

Figure A-15: Right Hinge / Monitor Switch Detail

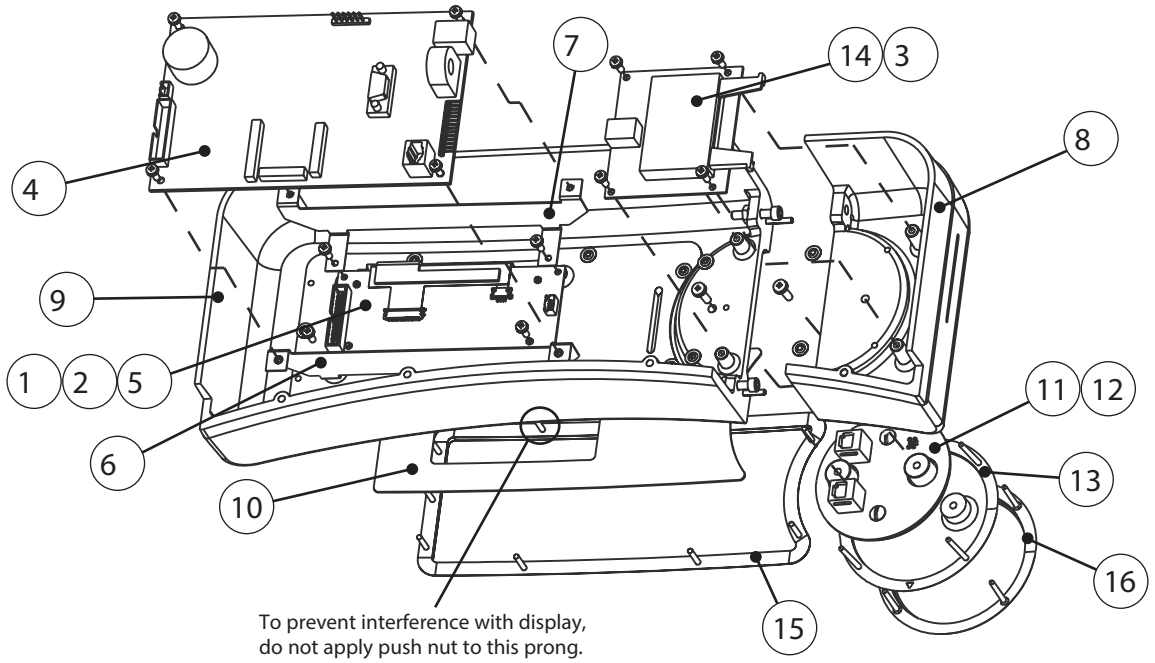

Figure A-16: Outer Shell Removed - Control Panel

Figure Reference #	Item Description	Item Part Number	Fastener Description	Fastener Part Number(s)
1	Cable, Display, Power, 3-Pin, 3-Wire	i1-9475	None	None
2	Cable, Display, Ribbon, 26-Pin, 5"	100197	None	None
3	Cable, Smart Card Reader	100182	None	None
4	Control Board	CON-3004-X-Y*	Screw, #6-32 x 3/8, Int Tooth, PPH, SS	102911 (qty 4)
5	Display, TFT	ENC-3011	Screw, #6-32 x 3/8, Int Tooth, PPH, SS	102911 (qty 4)
6	Display Bracket, Bottom	i1-9465	Screw, #6-32 x 3/8, Int Tooth, PPH, SS	102911 (qty 2)
7	Display Bracket, Top	i1-9464	Screw, #6-32 x 3/8, Int Tooth, PPH, SS	102911 (qty 2)
8	Housing, Control, Left End	i1-9526-1-T004 (SOTA) i1-9526-1-T006 (SBK) i1-9526-2-T005 (STAINLESS)	Screw, #10-32 x 1.00, Skt Hd, SS Nut, Keps, Hex, #10-32, Ext Tooth, Cres Pin, Roll, 0.125 Dia x 1.00 Lg, SS	101800 (qty 2) 102963 (qty 2) 101133 (qty 2)
9	Housing, Control, Display	i1-9527-T004 (SOTA) i1-9527-T002 (SBK) i1-9527-T005 (STAINLESS)	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 4)
10	Keypad**	i1-3217-1 (SOTA) i1-3217-2 (SBK) i1-3217-4 (STAINLESS)	None	None
11	Light Ring, LED (includes items 84 and 87)	i1-3218 (SOTA)	Screw, #8-32 x 1/2, PPHD, Int Sems, SS	102923 (qty 2)
12	Scanner, TurboChef Connect	CON-3016	Included with kit	Included
13	Medallion, Display	i1-9491-T006 (SOTA) i1-9489 (SBK) i1-9491-T005 (STAINLESS)	Nut, Push, 1/8" Screw, #8-32 x 1/2, PPHD, Int Sems, SS	101293 (qty 4) 102923 (qty 2)
14	Smart Card Reader	100506	Screw, #6-32 x 3/8, Int Tooth, PPH, SS	102911 (qty 4)
15	Trim Bezel, Display**	i1-9454-T006 (SOTA/SBK) i1-9454-T005 (STAINLESS)	Nut, Push, 1/8"	101293 (qty 8)
16	Trim Ring, Logo	i1-9455-T006 (SOTA/SBK) i1-9455-T005 (STAINLESS)	Nut, Push, 1/8"	101293 (qty 4)

* "-X" represents firmware and "-Y" represents the type of menu preloaded to the control board kit at the factory.

**To prevent air bubbles when laying the keypad, start by sticking one end of the keypad to the surface and then laying it across towards the other end. As you lay the keypad, ensure a proper seal.

Replacing Items - Removing Outer Shell and Back Cover Required (Figure A-17)

⚠ DANGER: Before replacing any oven component, ensure the oven is removed from any power source. Replacing a component while the oven is plugged in can result in serious injury or death.

⚠ CAUTION: Be careful to not tear the insulation when servicing components. Always reinstall the insulation properly before reinstalling the outer shell or back cover.

NOTE: Fasteners listed are required for installing component to oven.

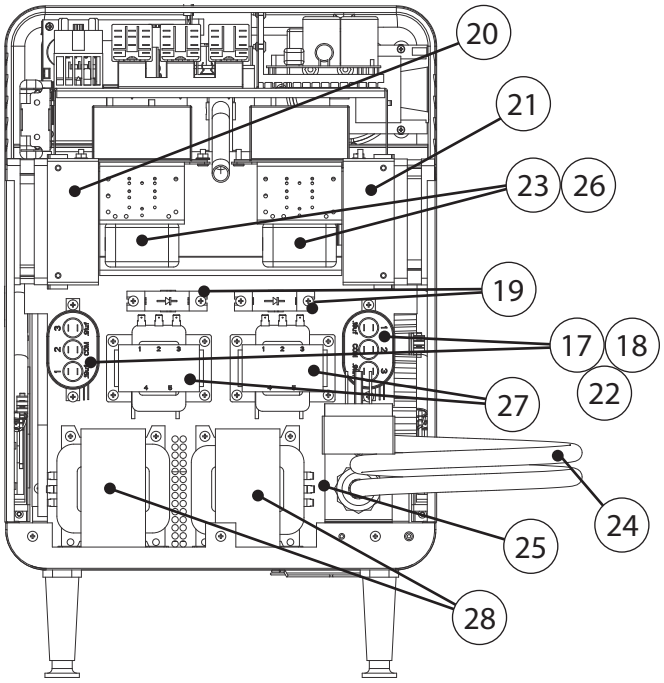

Figure A-17: Outer Shell and Back Cover Removed

Figure Reference #	Item Description	Item Part Number	Fastener Description	Fastener Part Number(s)
17	Capacitor, High-Voltage (x2)	100216 (Japan 50 Hz) ENC-3010-2 (Japan 60 Hz) ENC-3010-1 (All others)	Screw, #6-32 x 3/8, Int Tooth, PPH, SS Nut, #6-32 Keps, Ext Tooth, SS	102911 102961
18	Capacitor Clamp (x2)	104197 (Japan 60 Hz) 100134 (All others)	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 2)
19	Diode, High-Voltage (x2)	100481	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 2)
20	Duct, Magnetron Cooling Fan, L*	i1-9479	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 2)
21	Duct, Magnetron Cooling Fan, R*	i1-9480	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 2)
22	Jumper, Capacitor (Intl 50 Hz only)	i5-9378	None	None
23	Magnetron (x2)	NGC-3015	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 4)
24	Power Cord	Contact factory	None	None
25	Terminal Block	102049 (1 Ph) 102043 (3 Ph)	Screw, #10-32 x 3/4 Lg, PPH Sems, Int Tooth	102937 (qty 2)
26	Thermostat, Magnetron, 270°F (x2)	104228	Screw, Sh Mtl, Drill Point, 6-32 x 3/8, PPHD, Zinc	101684 (qty 2)
27	Transformer, Filament (x2)	NGC-3061-1 (USA) NGC-3061-2 (Intl) NGC-3061-3 (Japan)	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 4)
28	Transformer, High-Voltage (x2)	NGC-3062-1 (USA) NGC-3062-2 (Intl) NGC-3062-3 (Japan)	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 4)
29	Wire Harness, Line Voltage (not shown)	i1-9172 (1 Ph) i1-9171 (3 Ph)	None	None
30	Wire Harness, Cooling Fans (not shown)	i1-9174	None	None
31	Wire Harness, Heaters (not shown)	i1-9239	None	None
32	Wire Harness, Transformers (not shown)	i1-9173	None	None

* NOTE: Left and right orientation based on looking at the back of the oven.

Replacing Items - Removing Outer Shell and Back Cover Required, Single Magnetron Sota (Figure A-18)

⚠ DANGER: Before replacing any oven component, ensure the oven is removed from any power source. Replacing a component while the oven is plugged in can result in serious injury or death.

⚠ CAUTION: Be careful to not tear the insulation when servicing components. Always reinstall the insulation properly before reinstalling the outer shell or back cover.

NOTE: Fasteners listed are required for installing component to oven.

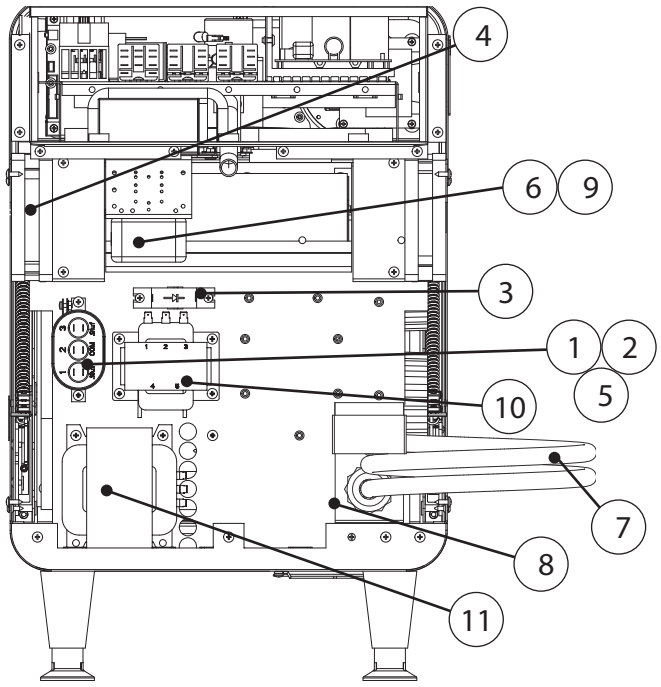

Figure A-18: Outer Shell and Back Cover Removed
Single Magnetron Sota

Figure Reference #	Item Description	Item Part Number	Fastener Description	Fastener Part Number(s)
1	Capacitor, High-Voltage	100216 (Japan 50 Hz) ENC-3010-2 (Japan 60 Hz) ENC-3010-1 (All others)	Screw, #6-32 x 3/8, Int Tooth, PPH, SS Nut, #6-32 Keps, Ext Tooth, SS	102911 102961
2	Capacitor Clamp	104197 (Japan 60 Hz) 100134 (All others)	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 2)
3	Diode, High-Voltage	100481	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 2)
4	Duct, Magnetron Cooling Fan, L*	i1-9479	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 2)
5	Jumper, Capacitor (Intl 50 Hz only)	i5-9378	None	None
6	Magnetron	NGC-3015	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 4)
7	Power Cord	Contact factory	None	None
8	Terminal Block	102049 (1 Ph)	Screw, #10-32 x 3/4 Lg, PPH Sems, Int Tooth	102937 (qty 2)
9	Thermostat, Magnetron, 270°F (x2)	104228	Screw, Sh Mtl, Drill Point, 6-32 x 3/8, PPHD, Zinc	101684 (qty 2)
10	Transformer, Filament	NGC-3061-1 (USA) NGC-3061-2 (Intl) NGC-3061-3 (Japan)	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 4)
11	Transformer, High-Voltage	NGC-3062-1 (USA) NGC-3062-2 (Intl) NGC-3062-3 (Japan)	Screw, #8 x 1/2, Serr Ph Truss Hd, Sheet Mtl	101688 (qty 4)
12	Wire Harness, Line Voltage (not shown)	i1-9172 (1 Ph)	None	None
13	Wire Harness, Cooling Fans (not shown)	i1-9174	None	None
14	Wire Harness, Heaters (not shown)	i1-9239	None	None
15	Wire Harness, Transformers (not shown)	i1-9173	None	None

* NOTE: Left and right orientation based on looking at the back of the oven.

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For service or information:

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